VOL. VIII, No. 3 MARCH, 1916

THE Journal of Home Economics

For those interested in Homemaking, Institution Management, and Educational Work in Home Economics

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The Journal of Home Economics is published monthly by the American Home Economics Association.

$2.00 A YEAR. FOREIGN $2.25. SINGLE COPIES 25 CENTS

HOW TO REMIT. Remittances should be sent by Draft on New York, Express Order or Postal Money Order, payable to the American Home Economics Association. Currency, unless mailed in a registered letter, is at the sender's risk.

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AMERICAN HOME ECONOMICS ASSOCIATION STATION N, BALTIMORE, MD.

Entered as second class matter at the Baltimore Post Office

Cottage near Brewster occupied by two young women teaching in adjacent districts

Double cottage at Eureka. One side occupied by principal and wife, the other by two women assistants

TEACHERS' COTTAGES, WASHINGTON (see page 109)

THE
Journal of Home Economics

VOL. VIII MARCH, 1916 No. 3

TEACHERS' COTTAGES AND RURAL HOME ECONOMICS[1]

JOSEPHINE PRESTON

State Superintendent of Public Instruction for Washington

The greatest problem in education today is the rural school. The greatest need is for teachers with initiative, leadership, experience, high ideals, character, broad sympathy, and education. Where shall we get them? Some are in the rural school. But on the whole they have not been particularly attracted to the rural school. Why?

It is only within recent years that we have recognized the importance of the rural school problem. Since we have awakened to its importance we have readjusted our courses of study to meet the needs of the rural life, and have more and more sought the well trained and experienced teacher for our rural school boys and girls.

But we found that we could not keep them after we secured them. They taught often only one year. Why? In the early history of our rural schools the pioneer teachers boarded around. If the family who took the teacher for the week was able to give comfortable and sanitary housing accommodations, all well and good. But if the teacher had to be crowded into family quarters with poorly prepared meals the memory of that week stood out as one of the glaring evils of rural life. We outgrew this "boarding around" and it became the custom for the teacher to board with one family, if that were possible, throughout the term.

Sometimes the majority of the families in the neighborhood wanted to board the teacher. Some of our greatest complications arose from

[1] Presented at the Eighth Annual Meeting of the American Home Economics Association, Seattle. 1915.

the boarding question because often the teacher had to choose from a number of places offered her. If perchance she changed her boarding place after once having selected it, it was certain to bring dissatisfaction.

Finally we reached the period in the boarding question when we found the farmer's wife mildly protesting against the teacher boarder. Sometimes it was because the teacher who came out to board expected first class hotel service in the busy farm home. She must either change her point of view or make life miserable for that home.

However the real reason for this growing discontent was because the farmer's wife worked hard during the spring, summer and fall months and counted the winter months as her time for recreation. Then too the farmer himself felt a desire to be relieved of the teacher boarder. One farmer said to me one day when I was presenting to him his responsibility to take the teacher to board, "I do not want a teacher sitting around my fireside every evening. I want to be alone with my family once in a while." I thought of that well furnished many-roomed house which he and his family called home and I said at once: "That intrusion is very easily adjusted. Put a stove in one of those fine large well-furnished bedrooms of yours and give the average teacher plenty of wood and you will see very little of her except at meal times." He straightened up with much dignity and considerable spirit and said, "Mrs. Preston, any teacher that would be too good to sit with my family in the evening could simply pack her trunk and leave."

Sometimes the argument against the teacher boarder comes to us in a controversy like this: Mrs. A. says, "I boarded the teacher last year; Mrs. B. can take her turn at it this year." Mrs. B. insists that she kept the teacher year before last and that it is Mrs. C's turn. Poor timid Mrs. C. says, "I would gladly take the teacher but we have ten children and only two bedrooms and I do not see how we could accommodate her."

The teacher's cottage idea came to us as a last resort. After dealing with this boarding question from an administrative standpoint for a number of years I took the position that no teacher could give her best services unless she was happy and comfortable in her boarding place. I felt that the district had a responsibility in regard to the teacher's housing conditions. For ten years we have been building cottages for the rural teacher where the need seemed to justify this expenditure on the part of the district.

The state of Washington now has one hundred and twelve cottages. Each of thirty out of thirty-nine counties possesses from one to twelve of these dwellings, varying in cost from fifty dollars to thirty-two hundred dollars. Some of these residences are movable "shacks" that can be set on a logging train and moved when the camp moves; some are humble "lean-tos" built against the side of the school-house; in one district, on the Colville Indian Reservation, the teacher lives in a combination house and tent; in many cases the old school building has been worked over for a house for the teacher when a new school-house has been erected. But the majority of our cottages are the serviceable, well-built little houses of from two to six rooms, standing near the school building on the school grounds.

But what has this to do with Home Economics? Why is this a problem of a Home Economics Association? It is a "rural teachers' home movement," and this in itself would be a sufficient reason; a second reason lies in the fact that Home Economics may be taught better in rural schools by the use of the rural school cottage.

If there is a teacher's cottage it may be used as a laboratory for domestic science. These cottages are equipped with the usual kitchen utensils, cook stoves, sinks or suitable wash stands, and work tables. One of the teachers in our state who utilizes the district cottage for domestic science demonstration allows the pupils to prepare the noonday lunch of the school here. The farmers' families contribute milk and potatoes and other vegetables for this community plan of noonday hot lunches at the school. The idea of linking the teacher's cottage with domestic science is only passing from a remote possibility to a reality, but the rural schools in the future that give their most efficient training will feel that they have not been given their full opportunity until they have been given a teacher's cottage in which to teach the fundamental principles of Home Economics.

The new Washington Course of Study will set forth plans for the child to get 50 per cent of his credit in agriculture and Home Economics by doing work at home and sending in proper reports. This is the plan that must be used in the majority of our isolated districts. The teacher in these districts will give as much instruction as possible in her limited day of work, and then the pupils will put into practice at home the knowledge that they have received at school.

The decoration of the school cottage, the furnishing of the school cot-

tage, the making of the bed in the school cottage, the setting of the table in the school cottage; these are the opportunities which come to the teacher over and over again in the occasional visits from pupils and neighborhood farm women to demonstrate a model lesson in home making and housekeeping. Our kitchen plans and furnishings are intended to include those priceless modern conveniences that would reform most country homes and should give the country woman the conception of an easier method of doing her work.

The teachers' cottage assures a living place for the teacher; it attracts better teachers; it increases the tenure of office; it makes the teacher infinitely more efficient in school room and community, for every subject taught, including Home Economics, is better taught because this better type of a teacher has been brought to the rural school.

DOMESTIC ART IN THE HIGH SCHOOL COMMERCIAL COURSE

CLARA M. STEELE

The importance of domestic art work in the course of study for the girl who will become a homemaker after graduation has long been recognized. Its worth as part of the training of the girl who takes the general high school course has been conceded for some time. But the idea that part of the time spent by girls in the commercial course in our high schools should be given to domestic art is still a new one.

The fact that personal appearance plays so large a part in a girl's success has long been known, as has also the fact that it is with great difficulty that the girl on a small wage presents an appearance which will bear careful inspection. Since this is true why should not our public schools in their commercial courses provide the girl with opportunities to learn how best to solve her problems and so make her personal appearance a help, rather than a hindrance to her success in business.

The following course is planned to meet the needs of the business girl.

OUTLINE OF DOMESTIC ART FOR GIRLS IN THE COMMERCIAL COURSE[1]

Time allowed. One year (36 weeks); one lesson (90 minutes) per week.

Previous work. Domestic Art work in seventh and eighth grades, including the elementary stitches and simple machine work. The making of very simple pieces of underwear, bags and the cooking uniforms.

PROBLEMS FOR COURSE

Main problem

What knowledge must I, a business girl, have of Domestic Arts to make my personal appearance a financial asset?

Contributing problems

I. What must I know of personal hygiene?

II. How much of my income shall I spend for clothes and how shall I apportion it?

III. What must I know in order to choose my clothes wisely?

IV. What must I know of sewing, garment-making and millinery in order to make my allowance suffice for my needs?

V. What can I learn that will help me prolong the usefulness of my clothes?

I. What must I know of personal hygiene?

1. Good posture. (a) Sitting, (b) Standing, (c) Walking.

2. Exercise. (a) Need of, (b) Kinds of, (c) Opportunities for.

3. Health habits. (a) Breathing (proper breathing through nose, results of mouth breathing, deep full breathing, effects of tight clothing on); (b) Sleeping (need of, amount necessary, regular habits, importance of fresh air, importance of comfortable bed, importance of well fitting sleeping garments); (c) Eating (importance of regular meal times, uniform amounts, thorough mastication); (d) Drinking (importance of abundance of water, right method in drinking, use of hot and cold drinks).

[1] *References:* Laughlin: The Complete Dressmaker.
Banner, Bertha: Household Sewing with Home Dress Making.
Patton, Frances: Home and School Sewing.

II. How much of my income shall I spend for clothes and how shall I apportion it?

Study of the budget as a whole: How much shall I spend for board, clothes, savings, incidental expenses, carfares, health (doctor, dentist, toilet supplies), religion and charity, improvement, amusements and recreation.

Clothing budget: How much shall I spend for suits, undergarments, shoes, ties, gloves, etc.

III. What must I know in order to choose my clothes wisely?

1. *Hygiene of clothing.*
2. *How to judge materials, trimmings, etc.*
3. *Suitability of* materials for garments, garment to wearer, garment to occasion, garment to purse.
4. *Costume design:* Requirements of good dressing include: (a) unity in costume, (b) good lines, (c) pleasing silhouette, (d) subordination of costume to wearer, (e) enhancement of beauty of wearer, (f) appropriateness.

IV. What must I know of sewing, garment-making and millinery in order to make my allowance suffice for my needs?

1. *Stitches commonly used.*
2. *Embroidery, crocheting, tatting, etc.*, for use in neckwear, etc.
3. *How to use a machine and its attachments.*
4. *How to choose, alter and use a commercial pattern.*
5. *How to make simple garments which are relatively expensive to buy ready made:* (a) Nice underwear; (b) Waists; (c) Neckwear—collars, cuffs, guimps, ties, etc.; (d) Simple dresses suitable for business.
6. *Construction of simple hat frames, their covering and trimming.*
7. *Renovating of materials—velvets, ribbons, silks and feathers.*

V. What can I learn that will help me prolong the usefulness of my clothes?

1. *Daily care:* (a) Clothes: general care, brushing, hanging, folding; (b) Shoes: brushing, airing, use of shoe trees; (c) Hats: brushing, use of paper bags for storage, substitutes for hat pins.

2. Weekly care: (a) Clothes: removal of stains, darning and mending, sponging and pressing, laundering (waists, collars and cuffs, gloves, stockings); (b) Shoes: repairing, shining.

3. Seasonal care: (a) Clothes (airing, removal of stains, darning and mending, laundering, folding, storing); (b) Shoes (cleaning, repairing, shining, storing); (c) Hats (brushing, packing, storing).

OUTLINE OF LESSONS

PROJECT	NO. OF LESSONS	PROCESSES	THOUGHT CONTENT	COST
Simple corset cover.	3	Review of work given in grades, adjusting pattern, altering pattern if necessary. Seams, sewing on lace and buttons, button holes. Making lingerie cord, crocheted or knotted. Other necessary stitches.	Choice of materials from standpoint of quality, suitability, laundering properties and cost. Choice of patterns: good lines, simplicity, ease in making and in laundering. Hygiene of clothing. Knit vs. muslin undergarments. Kinds of seams to be used. Why? When is it desirable to make underwear? Amount of money to be spent on underwear. Relative cost of home made and factory made underwear. Responsibility in buying. Consumer's League. Good taste in underwear.	
Shirtwaist.	8	Adjusting pattern, altering pattern. Cutting, fitting. Making plackets. Inserting sleeves. Sewing on hooks and eyes or fasteners. Finishing.	Study of designs suitable for business. Line and color harmony. Selection of pattern and material. Discussion of personal appearance and its relation to success in business. Study of budget. How much should this garment cost? How much strength is it economy for me to use in making my clothes? Need of exercise and good posture. Health habits, contributary to good appearance, a business asset. Care of waists. Laundering of white and colored materials. Folding, storing.	$.50

OUTLINE OF LESSONS—Continued

PROJECT	NO. OF LESSONS	PROCESSES	THOUGHT CONTENT	COST
Neckwear.	5	Designing of pattern and ornamentation. Cutting. Fitting. Embroidery stitches. Crocheting. Tatting.	Discussion of importance of neckwear in effectiveness of costume. Economy in making. Importance of individual touches in making a costume. Value of handwork. Just prices for it. Consumer's League work and its importance. Good designs for various types of figures. Harmony of color and line in costume. Economical value of utilizing spare moments by making usable fancy work. Care and laundering of handwork.	$.25
Darning and patching of articles brought from home.	3	Darning stockings. Darning cashmeres. Mending. Patching (hemmed, overhanded). Mending gloves.	Economy in darning and mending. When is it not economy? A "stitch in time." Economy in buying stockings of good quality and darning them often. Importance of good dyes. Effect of poorly fitted shoes on wear of stockings. Selection and care of shoes. Sense of self respect, the result of well mended garments. Unfavorable impressions which ripped gloves, run down heels, etc., give.	
Remodelling skirt (wool or silk.)[1]	12	Brushing skirt, ripping, cleaning, pressing. Altering pattern. Adjusting to material. Cutting, making, pressing. Seams. Hemming on facing, putting on bands. Sewing on braid. Placket. Fastening.	Advisability of remaking old garments. Removal of stains. Textiles. Laundering of wool. Application to undergarments. Selection of good design in pattern. Appropriateness to wearer. Importance of a pleasing silhouette. Desirability of simple styles. Care of skirts, dresses and coats. Brushing. Hanging.	

[1] In this course, problems in remodelling were chosen as they afford opportunities for work in cleaning of materials, renovating and daily, weekly and seasonal care of clothes for which it might not have been possible to allow time otherwise.

OUTLINE OF LESSONS—Continued

PROJECT	NO. OF LESSONS	PROCESSES	THOUGHT CONTENT	COST
Remodelling hat.	5	Cleaning frame and trimmings. Steaming velvet. Renovating silks, ribbons, feathers. Making trimmings, bows and flowers. Simple trimming.	Proportion of income to be spent on hats. Study of budget. Relation of lines of hat to face and to figure. Importance of hat in silhouette. Suitability of hat to occasion. Economy in buying good materials and conservative styles. Frame should fit the head and be comfortable. Headache caused by ill fitting, heavy hats. Effect upon hair of heavy hat. Care of hat. Daily and seasonal.	

THE QUESTION BOX

QUESTION: What is being taught today about the digestibility of boiled milk—digestibility meaning length of time, ease and completeness of digestion of the boiled milk, particularly as a food for babies.

ANSWER: That boiled milk of another species is better borne than raw milk of another species has been shown by a number of investigators. (The literature has been reviewed in the Lane-Claypon Report to the Local Government Board of London, New Series number 63, 1912.) According to Brenneman (*Journal of American Medical Association*, vol. lx, 1913, p. 575), the curd formed during the digestion of boiled cow's milk is much finer than that formed during the digestion of raw cow's milk. This undoubtedly explains the reason for those results which show that boiled milk is better borne. However, milk heated to the boiling temperature is less valuable as a food owing to the fact that one of the constituents, cystin, is in part destroyed by heating. (Rettger, *American Journal of Physiology*, vol. vi, 1902, p. 450); (Schultz, *Zeit. Physiol. Chem.*, vol. xxv, 1898, 16); (McCollum and Davis, *Journ. Biol. Chem.*, vol. xxiii, 1915, p. 247).

THE HIGH SCHOOL LIBRARY AND HOME ECONOMICS

MARY J. BOOTH

Librarian, State Normal School, Charleston, Illinois

How can the high school library help the teacher of Home Economics? In answer let me first ask another question, How did the college or university library help you when you, as a student of Home Economics, were receiving your training? If your student life was passed in a school where the general library had a representative collection of books and made them accessible by adequate cataloging and supplemented them with pamphlets, clippings, pictures, lantern slides and educational exhibits, you know perhaps better than I can tell you how a high school library with similar equipment might help you.

But I can imagine your discouragement when you discovered, on beginning your teaching, that practically nothing in the way of books or supplementary material was provided for your pupils by the high school library and that your private library was too small for the demands made upon it. Perhaps there was no high school library and very little material on Home Economics in the public library. Then you decided to remedy this condition and set about collecting material for the use of your classes. This constantly increasing mass of material was kept in your class room as the most convenient place. As your work increased you did not have time to collect many of the recent publications even if there had been room for more material.

The plan of having a general high school library has been proposed, with the intention of gathering together all the scattered books and pamphlets belonging to the school and placing them in one room in charge of a librarian. So we come back to the question asked at the beginning. How can the high school library help you, a teacher of Home Economics?

With all the material centralized, a teacher wishing to hunt up a topic in textiles, such as silk or cotton, could find in the library the books and pamphlets on the subject, or a record of their withdrawal. If withdrawn, they will be recalled for her use. Should she want the books for use in her class room they may be taken there; should she want them on reserve shelves in the library they may be placed there. If put on the reserve shelves they are available at any time during the school day to members of the class and may usually be withdrawn for use over night. With only class room libraries this system of reserve books can not be

undertaken and consequently the students have access to the books only when the class room is unoccupied. Often the teacher is obliged to leave soon after dismissal of school, and the room is inaccessible to pupils at perhaps the only time in the day when it might be used by them.

When the class has finished the topic in textiles the books are returned to the general collection where they are ready for the teacher of commercial geography or for the teacher of English for theme work. If a course is being given in costume design, there will probably be some historical consideration of the subject and this calls for books from the history department as well as from the Latin and Greek departments. If the course includes the costumes of different foreign countries of today the books in the geography department would be of use. In the study of household sanitation, books from the department of physiology and hygiene would be needed for supplementary use; in the study of household bacteriology books from the biological department; in the study of the sewing machine books from the department of physics; in the study of household chemistry books from the department of chemistry.

If class room libraries alone had been used this free interchange of books would have been almost impossible. Without the general catalog no one would know what books were owned by the different departments. With a general library well cataloged the books in different departments, treating of the same or related subjects, are brought together in the catalog and made available for all the teachers, thus giving each book the maximum amount of use.

A central library can be of great help in the collection of material obtainable free or at small cost. Especially in Home Economics there is a wealth of such material found in government publications, state publications, and advertising pamphlets. Much of this is of value, but the editions are limited and only those obtaining copies early can be certain of securing them. A librarian alert to increase the collection of material that she knows will be of use, will be on the watch for notices of valuable pamphlets. Of especial value for this purpose are the monthly catalog of United States public documents and the monthly catalog of state publications, both obtainable from the Superintendent of Documents, Washington. The monthly list of publications of the Department of Agriculture is also useful as it is issued before the monthly catalog of public documents, thus making the publications available earlier. The address list for illustrative materials and laboratory supplies for in-

struction in household arts issued by Teachers College, Columbia University, is of value.

Letters written on the library stationery usually bring the pamphlet requested, when the request of an individual would not always get a favorable response. Sometimes it will be possible to obtain six or more copies of a pamphlet needed for class use. The most valuable of the pamphlets would be pasted in pamphlet covers in order to stand hard usage, while others of less value would be filed with the clippings.

The kind of material available is illustrated by such pamphlets as Education for the Home, by Benjamin R. Andrews, U. S. Bureau of Education Bulletin, 1914, numbers, 36, 37, 38, 39; Mechanics of the Sewing Machine, Singer Sewing Machine Company, Singer Building, New York; Spices, McCormick and Company, Baltimore, Md.; Substitutes for Meat, and How to Use Left Overs, recent pamphlets published by the New York City Food Supply Committee. Sets of colored postcards, on tea and coffee, 25 in a set, are sent free by Hills Brothers, San Francisco, for example.

The high school library should also have a clipping collection, a picture collection, and educational exhibits. If a teacher of Home Economics were gathering information on the subject cocoa or chocolate, besides the books and pamphlets entered in the card catalog, there would be available pictures of how cocoa pods are gathered, and perhaps an exhibit showing the pods in different stages and the steps in the manufacture of cocoa and chocolate. For some subjects, as interior decoration, there would be clippings supplementing available books and pamphlets.

In order to have the library of the high school of the greatest usefulness, the librarian should be a person of good education and with library training. Some unsuccessful teacher who "just loves to read" will prove unsatisfactory as may also a good teacher who, interested in library work, wishes to undertake the care of the library as part of her school work. Some of the high schools in the East are demanding that the librarian be a college graduate and a graduate of a library school. With these requirements of course goes a salary equal to the other high school teachers who are heads of departments. The librarian is more than a clerk, more than some one to keep order in the study room.

Besides helping the teacher in Home Economics, the library must be of use to the high school student. Books belonging to all departments are made available for him by the catalog just as they are for the teacher.

But more than this, the student must be taught to use the library intelligently. Just how to get the time for this is a problem that has been worked out in different ways in different schools. Sometimes the English and history departments give half or whole recitation periods to the librarian for this instruction, and why should not the Home Economics department do this also? Surely the ability to use a library in these days when libraries are so general should be a part of the common education. The librarian, not the teacher, should give the instruction in the use of the library. In the early lessons the rules of the library and the location of books should be explained, the use of the catalog, including author, title, subject cards, and call number, and how to find the books on the shelves. Every entering class needs at least this instruction given with problems to work out embodying the points brought out in the lessons. Later on in the high school course the use of common reference books and of magazine indexes should be explained and problems given. Learning how to use the magazine indexes is particularly important as so many valuable and timely articles are printed in the magazines. In Home Economics, especially, there is much usable material in the magazines. By means of this instruction, the students are able with little waste of time to look up material for topics not only in the high school library but also in the public library, which must be used to supplement the school library.

One factor necessary for the full usefulness of the high school library lies in the teacher of Home Economics herself. If she is not interested and does not make use of the materials provided, and shows in every way she can that she does not wish to coöperate, she becomes one of the "stone walls" that librarians sometimes run up against; but if she is progressive, and realizes that the high school library is trying to serve her interests, she will cordially coöperate with the librarian, make use of the materials provided and suggest other ways of helpfulness. With a teacher of this kind and with a librarian well trained and anxious to help, the usefulness of the high school library is assured.

In closing I wish to quote the words used by Mr. Purd B. Wright, librarian of the Kansas City, Missouri, public library, in ending his address before the Library Department of the National Education Association in 1914. "In conclusion let it be borne in mind constantly by both librarians and teachers that their work is mutual and only by their getting this view point of each other, and understanding the end sought by each, can satisfactory results be obtained."

THE MINERAL NUTRIENTS IN PRACTICAL HUMAN DIETETICS[1]

E. B. FORBES

Ohio Agricultural Experiment Station, Wooster, Ohio

In consenting to present this paper I did so with the feeling that perhaps I have as good right as anyone else to confess for all of us that we know very little about the subject. The suggestions I have to make then are offered in entire humility and with satisfaction only that we are on the road to more complete understanding.

My task is to point out the bearings of results of experiments in the field of mineral metabolism upon our irrational, uncontrolled and largely uncontrollable human dietetic affairs. Only in the case of infants, invalids, lunatics and convicts does it seem practicable to regulate the diet of human beings with the same rationality and particularity with which the successful live-stock farmer habitually feeds his animals. In spite of the difficulties of the task, however, and the indifference of most of us to the economic and rational aspects of our own eating, there are those dependent upon us who should have the benefit of our wisest counsel, even though we put ourselves in the position of saying, "you are to do not as I do, but as I say."

In order to bring clearly to mind the basic principles of nutrition involved in this consideration I must enumerate the functions of the mineral elements in animal metabolism:

As bearers of electricity the mineral elements dominate the whole course of metabolism.

They conduct nerve stimuli, and play a leading rôle in the general process of cell stimulation.

They govern the contraction of the muscles, including those of the heart.

They compose the central agency for the maintenance of neutrality in the blood.

They enter into the composition of every living cell.

They compose supporting structures.

They assist in the coördination of the digestive processes.

[1] Presented at the meeting of the American Association for the Advancement of Science, Columbus, 1916.

They activate enzymes, and through their control of the chemical reaction of the blood and tissues they govern enzyme action.

They unite with injurious products of metabolism, and render them harmless or useful.

As catalyzers they alter the speed of reaction, and the rate of metabolism generally, as measured by oxygen consumption.

Through their effects on osmotic pressure they govern the movement of liquids, and maintain the proper liquid contents of the tissues.

Through their effects on surface tension they participate in the mechanism of cell movement.

Through their control of the imbibition of water by the colloids they govern absorption and secretion.

Through their control of the affinity of the blood for gases they govern respiration.

Finally, they control the state of solution, precipitation, mechanical aggregation, chemical association and ionization of the colloids which compose living tissue.

These then are some of the functions of the mineral elements. Considering their nature and importance it is at once obvious that life could not endure if its complex mineral requirements were not automatically and constantly maintained in almost perfect adjustment. What then are the facts which warrant the practical consideration of this subject? They are that in pathological states these functions are somewhat deranged, and that life as we live it is in many respects highly abnormal, in the sense of differing from that to which human metabolism is attuned; and with our ever increasing social differentiation life puts increasing stress upon the integrity of the body and its normal processes. In relation to food materials there are also important facts bearing on this matter of the mineral nutrients, for, while highly developed processes of food manufacture and efficient world-wide transportation give us the greatest opportunities for correct dietetics that there have ever been, these same agencies open the way to greater unwisdom and abuse in dietetics than have been possible in our more primitive days. The net result is an obligation on our part to prepare a defense of knowledge against the misfortunes of prosperity.

It is my belief that anything like exact quantitative control of human mineral metabolism, as a practical measure, is as impossible as it is unnecessary; impossible first, because any kind of control of human die-

tetics is very difficult; second, because our knowledge of the optimum mineral requirements of human beings is especially slight and fragmentary; third, because the interactions of the mineral elements among themselves affect mineral metabolism in such prominent ways that fixed and definite statements of mineral requirements are likely to be misleading. Exact control in these matters is unnecessary because of the existence of safety provisions for bridging over temporary deficiencies, of a perfection in harmony with the surpassing importance of mineral metabolism.

It is my belief, therefore, that in our present state of knowledge close statements of the mineral requirements of human beings involve a large element of "ceremonious delusion" (borrowing the expression from Thudichum), and that practical advice regarding the mineral metabolism of healthy human beings may most properly be general in character, and in the nature of recommendations of *types* of food products which should predominate in the diet under the various conditions of life, growth and activity.

We shall discusss certain of the mineral nutrients in detail, citing facts as to their occurrence in foods and metabolism in the body.

The one mineral salt which we use as such—sodium chloride—occupies a unique position among the mineral nutrients. Within wide limits it seems to make little difference how much sodium chloride we consume, and the kidneys excrete this salt without marked energy expenditure. Under certain conditions excessive intake of this salt causes slight increase in nitrogenous outgo, but such abnormal consumption would result in indigestion before the increased protein katabolism would become important in extent.

A special method and capacity of the kidneys for the elimination of sodium chloride is shown by observations of Schloss[2] and of Borchardt.[3] It appears that this salt alone fails to cause a loss of water from the body corresponding to the amount of salt eliminated.

Bunge relates our unusual appetite for salt to the potassium content of the diet, and the antagonistic relation between sodium and potassium which exists in metabolism. It takes such a quantity of potassium salt to cause an appreciable increase in the elimination of sodium, however, that I prefer to explain our peculiar relations to sodium chloride

[2] Schloss: Biochem. Ztschr., 22 (1909), nos. 3 and 4, pp. 283–289.
[3] Borchardt: Deut. med. Wochenschr., 38 (1912), no. 37, pp. 1723–1727.

as due to the marine origin of vertebrates and the consequent adaptation of these forms to life in a somewhat concentrated solution of this salt.

Other physiological antagonisms which are often mentioned are those between calcium and magnesium and between calcium and sodium; other less important ones have been shown to exist between chlorine and iodine, and between chlorine and bromine.

The retention of the minerals is also prominently affected by their relative abundance in comparison with the requirement, that is, by the so-called "law of minimum," the least abundant constituent, as compared with the demand, serving largely to determine the usefulness of others with which it is associated in metabolism. The various salts of the diet also affect the solubility of others of this same group of nutrients in important ways.

The net result of these interrelationships among the mineral nutrients is likely to be manifest as a prominent lack of correspondence between the retention and the intake of these substances. The man to whom quantitative relations in mineral metabolism appear to be simple and direct is not embarrassed by an acquaintance with much of the evidence.

Calcium, phosphorus and iron are more likely than other mineral nutrients to be lacking in human dietaries. On this account especial interest attaches to their occurrence in food. Calcium is especially abundant in milk, and is also contained in considerable quantities in eggs, vegetables and fruits. Phosphorus is abundant in milk, eggs, nuts, peas, beans and such cereal products as contain the outer seed coats. Iron is found in largest quantities in beef, eggs, beans, peas, green vegetables (especially spinach) and in the outer seed coats of the cereals. The foods which are poorest in minerals are polished rice, pearl hominy, white flour, bolted corn meal and other cereal foods which lack the outer seed coats. These foods, because of their highly digestible character and lack of salts are apt to be constipating. Magnesium is abundant in the cereals and is not apt to be deficient in normal rations. The magnesium salts of the outer seed coats of cereals contribute a laxative character to foods containing them. Enough sulphur is contained in the proteins of any ration which supplies the nitrogen requirement. Potassium is found in considerable quantities in most normal foods and is also present in sufficient amount in almost all diets.

Manganese, boron, silicon and iodine are among the less abundant

minerals in the body, the presence of which in the necessary quantities in the diet we take for granted. We are just now finishing up in my laboratory iodine estimations on about 950 samples of food products in a study which will show in what foods iodine is found, and which may perhaps show a relationship of the iodine of foods to the prevalence of goiter.

Considering the proportion of minerals to other nutrients needed during the several stages of life there is, from birth to maturity, in general a decreasing requirement, but with periods of increased demand due to unusual functional activity, especially during puberty, pregnancy and milk secretion. The usual mineral requirements of mature human beings are comparatively slight, and are probably satisfied by all normal diets (provided we specify with some particularity as to what constitutes a normal diet). It is, therefore, during rapid growth and during the reproductive life of women that the mineral nutrients are especially in demand, and it is at these times that lack of mineral nutriment and irrational hygiene cause or aggravate a number of well-known pathological conditions which are characteristic of these states of being. We shall mention in detail the mineral requirements at some of these times of greater need.

The normal food of the human infant naturally furnishes its full mineral requirement. This subject becomes of interest in this connection, therefore, in cases of artificial feeding and in certain metabolic derangements. For an artificial food we naturally turn first to cow's milk, which because of high fat and casein contents must be liberally diluted. If water is used, the necessary dilution reduces the minerals, the albumin, the lecithin and the so-called accessory nutrients to an undesirable extent. The best diluent is whey, which anyone can prepare with the aid of a thermometer and a commercial rennet preparation in a few minutes. (The whey must be heated to 68°C. or 154° Fahrenheit to kill the enzyme, before it is mixed with milk.) With combinations of whey, skim milk, cream and milk sugar you can play any dietetic tune you please on the infant organism, and with these foods the intelligent parent can rear any infant which can live at all. The especial usefulness of whey is due to its abundant mineral content in natural physiological solution. It serves as a stabilizer—a corrective. You can do no harm with whey unless you use the evaporated preparation, whey powder. It is possible by an abuse of this food to cause œdema (in weak infants)

through excessive ingestion of minerals, though this would never occur in its proper use.

The commonest metabolic disturbance in infants is gastrointestinal indigestion. Its commonest cause is a weak digestive apparatus and too much fat in the food. Alkali soaps, formed in the intestine, instead of being digested and absorbed are passed off in the feces. Alkalis are lost to the organism; mineral acids are left to predominate; infantile acidosis ensues. What shall we do? Reduce the fat in the food and add sodium citrate to furnish an oxidizable alkali salt.

Because of its low oxidative capacity the infant organism is especially subject to acid intoxication from relatively slight causes, the acid excess being due to the normal acid products of metabolism and to imperfectly oxidized organic compounds, especially beta-oxybutyric acid. We have mentioned the weak digestive apparatus and deficient capacity to handle fat. Inanition also causes acidosis in infants. Fever is a very common cause. In all these cases whey is especially valuable. Many a child has been taken through long sieges of fever on whey. Children do not lose weight rapidly on whey alone. Egg white and fruit juice, especially that of the orange, may be used with whey to advantage; they furnish some nutrient and appreciable amounts of alkali.

The infant is born with a store of iron within its body. During the nursing period this store is gradually depleted, since the milk contains little iron. At weaning time the infant stands in need of iron. This is usually supplied in egg yolk, beef press juice, scraped beef, prunes, whole wheat foods and oatmeal, and some physicians of unquestioned standing recommend spinach. I happen never to have seen spinach used, however, for an infant. Egg yolk is of especial value as a source of iron, calcium, phosphorus and lecithin. But it is an exceedingly rich food. It must be fed with great care on two accounts, first to avoid making the baby sick, because while it is usually well taken it acts like poison to some infants, and second because the value of egg is so great that it is especially unfortunate if you upset the infant by an overallowance, since it may be a long time before it will regain its tolerance for this food.

In connection with the mineral metabolism of infants mention must also be made of rachitis. The cause of this disease is unknown. It is not due *primarily* to lack of minerals in the diet and does not respond

readily to simple increase of minerals in the food, though calcium salts administered with phosphorized cod-liver oil are usually beneficial.

The existence in infants and older children of simple malnutrition of the bones, a common malady in young farm animals, is not well established; and the prevalent imperfections of children's teeth are not certainly related to deficiencies in the diet, but seem rather to be caused by lack of exercise (due to the fine milling of our cereals and the chewing of our meat with a sausage mill), the increasing use of sugar (a readily fermentable, acid-producing food) and increasing use of fruits, the organic acids of which soften the tooth enamel.

In considering the mineral requirements of human beings we may bear in mind the facts that more than three-fourths of the ash of the body is in the skeleton, which includes about 88 per cent of the phosphorus and more than 99 per cent of the calcium of the entire body. Thus in discussing mineral requirements of the organism as a whole we have to do very largely indeed with the skeleton, but we must not overemphasize these facts, for the quantities involved are no gauge of functional importance, as is illustrated by the fact that iodine, which is found in the body in infinitesimal amounts is just as essential as the pounds of calcium.

Beyond the period of infancy the mineral nutrient which is most commonly lacking in the diet is calcium, though phosphorus also may be deficient, and the iron content of the diet is sometimes inadequate, as evidenced by the existence of anæmia in children.

For purposes of growth our best single sources of mineral nutriment are milk and eggs. Of these, milk lacks only iron, and eggs only calcium. The incubating bird supplements the moderate calcium content of the egg by absorbing an appreciable amount of lime from the shell.

During the reproductive life of women liberal use should be made of the iron-containing foods, such as beef, eggs, fruits and green vegetables, especially spinach, green beans and cabbage. Lactation makes a heavier demand upon the mother for mineral nutriment than any other incident in her life, and the most efficient method of providing the mineral requirement is, naturally, through the use of milk, or foods made from milk.

In old age there seems to be an absorption and loss from the body of much bone substance coincident with the general atrophy of the tissues. This is most apparent in the receding of the processes of the

maxillæ and the absorption of the spongy structure of the interior of the long bones. This appears to be a physiologic process, and we have no evidence that it is affected one way or the other by the minerals of the diet, though it is conceivable that there might be some such influence.

Generally speaking, a high ash content of the food is desirable, since the organism is much better able to handle an excess of ash constituents than to meet a deficiency. It is good practice, therefore, to utilize the water in which foods are cooked, in so far as this can be done without detracting from the acceptability of the food, since the cooking-water dissolves out much mineral matter. An abundance of mineral salt in the diet is also desirable, aside from nutritive considerations, because they contribute a laxative character to the food. Foods which are deficient in minerals are apt to be constipating.

A general character of the mineral nutrients of foods is the predominance of acid or basic elements. If the nutrients are present in the proportions in which they are needed the bases will predominate, and it is probably best that the bases should exceed the acid elements in the diet. It is true, however, that the organism has the capacity to neutralize a considerable excess of acids. Meats, eggs and cereals have acid ash; vegetables, milk and most fruits have alkaline ash. The latter group should be liberally represented in the diet.

The diets which are most likely to supply enough of each of the minerals are those characterized by liberality and diversity. Extreme simplicity of diet is not advantageous. The usual diets of prosperous Americans do not lack mineral nutrients. But we are not all prosperous, and some of us choose unusual dietetic combinations. The central features of improperly chosen diets are usually an undue dependence upon meats and foods made from finely milled cereals or other cereal foods lacking the outer seed coats, and too little use of milk and vegetables.

Those circumstances most likely to lead us into error in this matter are ignorance, poverty, parsimony, dietetic fads, peculiarities of appetite and disordered digestive functions.

Now in conclusion, it is certainly true that we muddle along fairly well without much attention to this subject, but one never knows when he may need additional insurance in the way of understanding. Through my slight knowledge of this subject I was able to save my own son, and that of course seems to me to have been worth while. Then too, though

there be no lives in danger, there is a certain satisfaction which we all take in efforts to direct our affairs with intelligence even though "the worst laid plans of mice and men gang oft aright."

A METHOD FOR SUPPORTING FINANCIAL RECORDS

The readers of the JOURNAL who have responsibility for the finances of any department of a school, of a college, or of business relations, may be interested to learn of the devices now in force within the Association for making easy and adequate an audit of the Association finances.

Two requirements for an audit are universally applicable. The first is some evidence that all money which ought to have been collected has been reported or is shown to be still due, and the second is evidence that all money shown to have been collected has been adequately accounted for either by authorized payments or by funds in hand. These things do not require any particular method of keeping books, but make absolutely necessary some documentary or physical evidence of both receipts and disbursements.

With regard to receipts of money, a system should require that when money is received for reasons which do not compel the receiver of the money to deliver at once equivalent value (such as merchandise, books, etc.), some documentary evidence shall be retained in the office to show how much was received and for what reason. The best evidence for this purpose is a form of receipt, which every remitter knows that he should get whenever he makes payment, so arranged that not only the receipt transmitted to the sender of money but the stub of the receipt remaining in the hands of the receiver of the money shall indicate how much was received. With such an arrangement, it is impossible for the receiver of money to sequester any funds unless he gives an unauthorized receipt, or no receipt, in return; and to this the sender of the money would naturally object.

The Association, in order to provide that the central office and the treasurer may have documentary evidence for satisfying the auditors regarding the amount for which they are actually responsible, has pro-

vided a special form of triplicate receipts, consecutively numbered in bound books, having at the left end, in a single horizontal column, numbers from "one" to "ten," the receipt proper indicating that the amount shown on the margin of the receipt is the amount which has been received. When, therefore, the receipt is detached, at the point indicating the amount received, the next higher number remaining as a stub in the bound receipt book is known to be higher by one number than the amount receipted for; and this is the auditor's evidence of the receipt. Only even dollars are provided for, because dues and subscriptions are in even dollars. As handled in practice, the first copy of each receipt is sent to the remitter, the second, which is on very thin paper, is sent to the treasurer with the funds collected, and the third, which is on thin cardboard, is retained in the central office for reference. The receipt of money from the sales of publications is covered by the delivery of the goods, and may be checked by the auditors through a comparison with the copies printed and the stock on hand.

For covering disbursements, a blank voucher lists the bills which each copy is intended to authorize, with date and amount, and accompanies the original bills; and the signature of some officer of the Association, authorized by vote of the Council to incur debt, is required before the treasurer makes payment. In case the payment is authorized directly by the Council or by vote of an appropriate committee, the voucher form indicates such vote, with the signature of the person competent to justify the expenditure. The back of the voucher form lists the objects for which expenditure is made, and when the accompanying bills do not make sufficiently apparent the object served, the officer approving payment indicates the proper distribution of the charge. To avoid annoying delays in meeting petty current expenses, as carfares, telegrams, expressage, etc., petty cash funds are provided when necessary. The officers holding such funds are responsible to keep account of disbursements from them, and to cover such disbursements by signed vouchers—on receipt of which the treasurer reimburses the officer and charges the money reimbursed to the objects for which the money was originally spent.

This method simplifies the keeping of the accounts, for the sources of each kind of income and the cause of all expenditure are indicated by documentary evidence or by physical inventory.

SUMAC AND ITS USES

Lovers of wild plants and flowers have often admired the sumac and have wondered if it had any use. As a matter of fact, the sumac has served various purposes, besides being decorative.

The wood (and under favorable circumstances, the tree makes a fairly large growth) is very beautiful, being a clear yellow with darker veining. It was more appreciated in earlier times than at present, perhaps because it was procured more easily then than now.

The dried fruit of the smooth sumac (Rhus glabra) has had some use in medicine. The berries are astringent and very sour, owing their latter quality to the acid present in their downy covering. According to reliable information, they have been used, though infrequently, for making an acid drink and for a jelly mixture. It hardly seems worth while to use sumac berries for such a purpose in these days, but in earlier times housekeepers had a much more limited list of food materials to draw upon and tested pretty nearly everything in their attempts to secure variety, making use of many things which had no marked merit.

Sumac wood, bark, leaves and peduncles were used by our grandmothers in domestic coloring; for instance, in dyeing black on cotton. Many receipts for such home dyes may be found in the manuals and household receipt books, which so commonly found a place on the home "book-shelf" fifty or more years ago.

PASTEURIZING CREAM

The cost of pasteurizing cream in the manufacture of butter has been estimated by specialists in the U. S. Department of Agriculture to vary, under local conditions, from 6 hundredths to 15 hundredths of a cent for each pound of butter. In comparison with the market price of first-class butter, this cost may be said to be almost negligible. In addition, the process of pasteurization improves the healthfulness of the product.

STUDENTS' CONTRIBUTIONS

The JOURNAL from time to time has received papers from students in Home Economics courses representing work that is often of great interest and value. It seems fair, however, that such material should be presented as students' work rather than with the authority that would come from the experienced teacher or worker.

The JOURNAL will be glad to reserve an average of two pages a month for such contributions if the various schools are interested to send them.

The following paper is by two graduates of Ohio State University, but was prepared while the authors were students in that institution.

It was sent in response to Miss Barrow's request for records of the comparison of home made and commercially made products.

Miss Anna Van Meter, Department of Home Economics, Ohio State University, sends this note: "The data given and the conclusions drawn in this partial report are valuable largely because of the suggestions which they offer for more thorough tests along the same lines."—THE EDITOR.

THE COMPARATIVE COST OF HOME PREPARED AND COMMERCIALLY PREPARED FOODS

LEONA C. FRECHTLING AND MARY R. BETZ

The aim of this problem was to determine whether it is more economical and desirable to prepare foods at home or to buy them ready prepared. We considered:

1. The cost of materials. This includes not only the raw materials used, but also glasses, cans, and rubbers. The entire cost of the rubbers, while only one-fifth of that of the glasses and cans was used, as these latter can be used at least five times.

2. The cost of fuel. As we were taking Columbus prices and conditions, we used gas as fuel. There might be some question in regard to the fuel in this work, as in many cases the quantities prepared, such as jellies, were not so large as would probably be prepared at one time in a household. This, of course, would increase the cost of fuel. In baking, this error is eliminated by the fact that the quantities prepared are comparable to household practice. For example, two loaves of bread, cinnamon rolls, Parker House rolls, and short cake were made in one afternoon and baked together.

3. The desirability of the finished product. This was considered only in relation to cost. A low priced but very undesirable product would not be considered cheap in comparison with a higher priced but much more desirable product.

The time was not considered at all, for two reasons. First, in doing

this work we had in mind the housekeeper. Preparation of foods is a part of her profession and therefore her time is already paid for. The same thing is true in regard to cooks and maids, who are now almost entirely paid by the week, and not by the amount of work accomplished. Secondly, the conditions under which this work was done were very different from those in a household, as a very accurate account of all things used was kept, and thus the time of preparing greatly lengthened. However, in summing up the work we have estimated the time ordinarily required to do the work in a household.

The wear and tear on the cooking utensils and stoves likewise were not taken into account, as it was so small in the short time required for this work.

The following is an outline of the foods considered:

1. Canned goods: vegetables, fruits, relishes, dressings, catsup.
2. Preserved goods: jellies, marmalades, preserves.
3. Flour mixtures: pies, cakes, cookies, bread, rolls, doughnuts, noodles.
4. Meals.
5. Desserts.

In making these comparisons we purchased what we thought a good representative sample of the class of goods to be considered, and matched these as nearly as possible with the home products. In the first and second classes of goods we compared by quantities; in the flour mixtures, by weight. With reference to the meals we calculated the cost per person, and took into account what was actually eaten in each case, regardless of whether they were of equal amounts or not.

Comparisons of quality and of price of some of the products will be found in the data following, but there are conclusions that can be made generally in regard to these classes of foods. In canned goods and preserves, and also in desserts, there is a marked difference in both price and quality. Most commercial goods are not so desirable as the home product, and have a characteristic taste. In flour mixtures the difference lies in quality rather than in price. In the case of meals things other than mere cost and flavor entered in—for example, that of having the meal prepared at a definite time. We had the various things of the meal ordered and they were promised to be delivered before the time of the lunch. Lunch time came and the invited guests arrived but the order had not been delivered. After keeping the guests waiting for some

time, we rushed to the nearest grocery and bought what could be served immediately.

There was not time for reheating the preparations. Of course, it is conceivable that this might happen to an order for raw materials, but raw materials can usually be ordered long enough beforehand so that such a delay of delivery would not be an inconvenience, whereas not many prepared commercial products can be kept for any great length of time in the household. For instance, in one of our meals we served ice cream. The quantity needed was so small that it could not be gotten packed, therefore, we were forced to go after it just before serving the meal.

After considering all these food preparations we came to the general conclusion that in almost every instance it is cheaper and more satisfactory to prepare foods at home than to buy them ready prepared.

Comparison of products

FOOD	AMOUNT COMPARED	COST OF COMMERCIAL	COST OF HOME MADE	TIME	REMARKS
		cents	*cents*		
Canned peaches..	1 pint	20	7.6297	45 min.	Commercial product had uncooked taste and was hard and rather tasteless. Home product had a very good flavor.
Grape juice.....	1 pint	25	5.7725	30 min.	Home product a great deal fresher, but otherwise products are very much alike.
Grape jelly.....	1 glass	25	3.1805	1 hr.	Commercial is gummy and rather tasteless. Home product of better consistency and had a fresh fruit taste.
Apple jelly.....	1 pint	50	17.7280	1½ hrs.	Commercial is gummy and tasteless. Home product of better consistency and has a fresh fruit taste.
Orange marmalade.....	1 glass	25	7.0496		Commercial had a very bitter and undesirable taste. It was of gummy consistency. Home product had a fairly good taste, but undesirable consistency.
Catsup.....	1 pint	30	11.6752		Home product had a very good flavor of fresh tomatoes. Commercial had peculiar characteristic flavor, and evidently was colored.

Comparison of products—continued

FOOD	AMOUNT COMPARED	COST OF COMMERCIAL	COST OF HOME MADE	TIME	REMARKS
		cents	*cents*		
Salad dressing...	½ pint	30	8.9294	15 min.	Commercial had a sour, mustard taste—very undesirable. Highly colored.
Doughnuts	1 dozen	10	7.5026	1 hr.	Commercial were grease soaked, while home made had a very good flavor. Nutmeg and grease composed all the flavor that could be detected in commercial.
Apple pie.....	1 pie	10	9.0880	45 min.	Commercial product tasteless, crust quite good, tender and well browned. Home product had a very good flavor and crust was very similar to commercial. Very likely commercial was made of canned apples.
Bread.....	425 gms. 1 commercial loaf	5	4.3565	4 hrs.	The home product was very much more desirable in texture and flavor, having a sweet nutty flavor rather than a sour "baker's" flavor.
Cinnamon rolls..	285 gms. (½ doz. commercial)	5	2.9610	4 hrs.	The same comparison may be made of cinnamon rolls as of bread. Besides this home product can always be had fresh while the commercial rolls we got were stale.
Ginger cakes....	196.5 gms. (7 commercial.)	5	4.2162	1 hr.	Home made were lighter, moister, better texture and flavor. Commercial were hard, had a peculiar baker's taste—were much less desirable.
Jelly roll.....	1 roll	10	12.4020	1½ hrs.	Home made much better than commercial. Eggs were fresh in the home made, but in the commercial they were stale.
Sugar cookies....	1 dozen	10	8.3000	1½ hrs.	The home and commercial products were very similar—but the characteristic flavor of the commercial was lacking in home made.
Patty shells.....	1 dozen	30	14.1000		Very much alike. Commercials were very desirable.
Lemon ice.....	1 quart	40	14.5909	1½ hrs.	Home product had a good flavor. Commercial did not have lemon taste but a bitter, bity commercial flavor.

FOR THE HOMEMAKER

THE USE OF DIABETIC FLOURS

AMY L. DANIELS AND GRACE DULANEY

Department of Home Economics, University of Wisconsin

Requests often come for information concerning the preparation of food in the home for a diabetic patient. The physician has given general directions, but the one who must carry out these instructions has no knowledge of the necessary detail. The following article should be of service to those who need this help, as well as to teachers of dietetics.—THE EDITOR.

One of the most serious problems which confronts us in the treatment of diabetes mellitus is the supplying of suitable food to the patient. To keep the urine sugar-free, yet give the individual a variety in his food and satisfy his appetite, requires much skill and thought. It is difficult for the patient to adjust his appetite to a low carbohydrate diet. One can easily dispense with the starchy vegetables, but it is the bread, cake and sweets for which the diabetic has a constant longing. Bread is an article of diet which enters into the daily menu of all classes of people more extensively than any other form of food. The desire to give the diabetic a bread low in carbohydrate led to the introduction of gluten bread in 1841. The flour for this bread was manufactured by washing the starch from wheat flour. Following this first attempt there have been many so-called gluten flours and similar preparations put upon the market. Many of these flours are very hard to convert into pleasing and appetizing breads, because of the small amount of starch contained in them. A yeast bread requires starch; therefore, with those flours containing little or no carbohydrate, other leavening agents must be used. Further, the same proportions of these prepared flours cannot be used, because they absorb much more liquid than the wheat flours.

Owing to the difficulty experienced in making palatable dishes from the gluten flours and the uncertainty of their composition, the use of these and similar diabetic preparations has been practically abandoned. However, in 1913 the Connecticut Agricultural Experiment Station published a bulletin containing the results of the analyses of a large number of diabetic preparations. Many of these are made from wheat and

contain more or less starch; others are made from soy beans, lentils, and nuts of various kinds. Since we have these data, there is no reason why some of these manufactured products cannot be used for the preparation of breads and cakes for the diabetic patient and thus satisfy his craving for these foods. Recent experiment work, carried on by many investigators, on the dietetic treatment of diabetes makes a study of the methods of using diabetic flours pertinent at this time.

The preparations used in the formulae given are representative of the various types of diabetic flours. The composition of these is given in the table below.[1]

These commercial products were selected on the basis of analytical work, reported by the Connecticut Agricultural Experiment Station.[2]

Doubtless others that would answer equally well might have been chosen, but since advertisements are often misleading in their statements none should ever be used without knowledge of their composition from an independent source.

The use of sugar in the diet of a diabetic is generally prohibited. In the recipes saccharin is used as the sweetening agent. This is a coal-tar product and, although supplying no nutriment, is a useful means of furnishing the sweet taste in food mixtures. It is about five hundred times sweeter than cane sugar, so only very small quantities are needed. However, it must be used in moderation, because large doses—1 to 1.5 grams—are followed by digestive disturbances. Saccharin in small

[1] *Composition and cost of diabetic flours*

FLOUR	COST PER POUND	PERCENTAGE COMPOSITION			MANUFACTURER
		Protein	Fat	Carbohydrate	
Hoyt's gum gluten	$0.14	31	1.6	52	Pure Gluten Food Company
Twenty per cent gluten meal	0.25	27	0.5	60	Kellogg Food Company
Soja bean meal	0.50	41	20.0	25	Theo. Metcalf Company
Vegetable gluten meal	0.50	80	1.5	10	Theo. Metcalf Company
Protosoy soy flour	0.50	42	20.0	25	Health Food Company
Lentil brosia[3]	0.12	25	1.0	59	Calumet Tea and Coffee Company

[2] Street, J. P., Report of the Connecticut Agricultural Exp. Station, Food Products and Drugs, 1913, Section 1.

[3] In addition to those included in the report, lentil brosia, a preparation of dried and pulverized lentils was used. Its composition and cost are therefore given above.

doses, not exceeding 0.3 gram (5 grains) daily apparently cause no untoward results.[4] In using saccharin it will be found most convenient to dissolve a definite quantity in a given amount of water, so that one teaspoonful of the mixture will contain a known amount of saccharin. For example, one gram of saccharin may be dissolved in two and one-half tablespoonfuls of water, in which case one-half of a teaspoonful of the liquid will contain one grain of saccharin. The term grain used in the recipes refers to the apothecaries' weight.

Since, according to the newer methods of feeding diabetic patients it is necessary to know how much of the various food stuffs, protein and fat as well as carbohydrate, is being supplied, we have given the nutritive value of the dishes prepared by the various formulae. All measures are level; and in all cases the flour should be sifted before measuring.

Following are rules for the typical batter mixture using various diabetic flours:

MUFFINS

½ egg
¼ cup water
¼ saltspoon salt
½ tablespoon melted butter
¼ cup Hoyt's gum gluten flour
1 teaspoon baking powder

Sift the dry ingredients, add melted butter, beaten egg, and gradually the water. Beat thoroughly. Fill well buttered gem-pans about two-thirds full and bake in a hot oven (230° C. or 446° F.) twenty minutes.

Number of muffins—two.

Composition and nutritive value[5]

	grams
Protein	12.21
Fat	9.11
Carbohydrate	14.7
Total calories	189.63

POP-OVERS

¼ egg
¼ cup water
2 tablespoons Hoyt's gum gluten flour
¼ saltspoon salt

Mix ingredients thoroughly with a Dover egg beater. Pour into a buttered pop-over cup. Bake in a hot oven (240°C. or 464° F.) for forty minutes.

[4] Friedenwald and Ruhrah: Diet in Health and Disease.

[5] The data pertaining to food values are taken from Rose: Laboratory Manual of Dietetics, 1912.

Number of pop-overs—one.

Composition and nutritive value

	grams
Protein	6.06
Fat	1.54
Carbohydrate	7.3
Total calories	67.58

YEAST BREAD

¼ yeast cake
¾ cup water
½ cup Hoyt's gum gluten flour
¼ cup vegetable gluten meal
¼ teaspoon salt

Mix the two flours and proceed as with the Hoyt's gum gluten bread.

Composition and nutritive value

	grams
Protein	40.2
Fat	1.3
Carbohydrate	32.2
Total calories	301.48

ALMOND CAKE

2 eggs
3 tablespoons finely ground almonds
2 tablespoons Hoyt's gum gluten flour
1 teaspoon lemon juice
1 grain saccharin

Beat the whites of eggs. Fold in gradually the almonds and flour. Beat the yolks of the eggs; dissolve the saccharin in the lemon juice, add to yolks and fold into the whites. Bake in buttered cake pan in a slow oven (170°C. or 338° F.).

Composition and nutritive value

	grams
Protein	20.9
Fat	18.6
Carbohydrate	9.82
Total calories	290.68

ALMOND MACAROONS

1 egg white
3 tablespoons finely ground almonds
½ grain saccharin

Beat the egg white. Dissolve saccharin in one teaspoon of water, add to beaten egg white and fold in almond meal. Drop on buttered tin and bake in slow oven (170°C.).

Composition and nutritive value

	grams
Protein	6.45
Fat	7.84
Carbohydrate	2.45
Total calories	106.16

MUFFINS

½ egg
¼ cup water
¼ saltspoon salt
1 tablespoon butter
3 tablespoons 20% gluten meal
1 teaspoon baking powder

Sift dry ingredients, add melted butter, beaten egg, and water. Beat thoroughly. Fill buttered muffin tins about two-thirds full and bake in a hot oven (230°C.) for twenty-five minutes.

Number of muffins—two.

Composition and nutritive value

	grams
Protein	7.07
Fat	14.73
Carbohydrate	7.8
Total calories	192.05

GRIDDLE CAKES

¼ egg
½ cup buttermilk
¼ saltspoon salt
½ cup Hoyt's gum gluten flour
¼ teaspoon soda

Mix dry ingredients, add beaten egg and buttermilk. Bake on a well greased griddle.

Number of cakes—six.

Composition and nutritive value

	grams
Protein	24.87
Fat	3.37
Carbohydrate	36.15
Total calories	274.4

YEAST BREAD

½ yeast cake
¾ cup water
¼ teaspoon salt
1 cup Hoyt's gum gluten flour

Mix the yeast in a small amount of warm water and add to the other ingredients. Mix to a stiff dough. Knead thoroughly, using enough flour to keep it from sticking to the board. Place the dough in a pan to rise. When it has risen to about twice its size, knead again, form

into a loaf and let it rise in the baking pan, until it has doubled its bulk. Bake in hot oven (230°C.) for forty-five minutes.

Number of loaves—one.

Composition and nutritive value

	grams
Protein	35.0
Fat	1.8
Carbohydrate	59.0
Total calories	392.2

MUFFINS

¼ egg	7 tablespoons soja bean meal
¼ cup water	1 tablespoon butter
¼ saltspoon salt	1 teaspoon baking powder

Mix dry ingredients, add melted butter, beaten egg and water. Beat thoroughly. Bake in well buttered muffin tins in a hot oven (230°C.) for twenty-five minutes.

Number of muffins—two.

Composition and nutritive value

	grams
Protein	14.49
Fat	19.39
Carbohydrate	7.82
Total calories	263.95

MUFFINS

¼ egg	1 tablespoon butter
¼ cup water	3 tablespoons Protosoy flour
¼ saltspoon salt	1 teaspoon baking powder

Add melted butter, beaten egg, and water to dry ingredients. Bake in well buttered muffin tins in a hot oven (230°C.) for twenty-five minutes.

Number of muffins—two.

Composition and nutritive value

	grams
Protein	8.58
Fat	16.52
Carbohydrate	3.9
Total calories	198.6

MUFFINS

¼ egg	1 tablespoon butter
¼ cup water	3½ tablespoons vegetable gluten meal
¼ saltspoon salt	1 teaspoon baking powder

Mix dry ingredients. Add melted butter, beaten egg and water. Beat thoroughly and bake in a hot oven (230°C.) for twenty-five minutes.

Number of muffins—two.

Composition and nutritive value

	grams
Protein	20.83
Fat	13.69
Carbohydrates	2.06
Total calories	214.7

MUFFINS

½ egg	1 tablespoon butter
5 tablespoons water	4 tablespoons lentil brosia
¼ saltspoon salt	1 teaspoon baking powder

Mix dry ingredients. Add melted butter, beaten egg and water. Bake in a hot oven (230°C.) for twenty-five minutes.

Number of muffins—two.

Composition and nutritive value

	grams
Protein	8.83
Fat	13.36
Carbohydrate	16.8
Total calories	222.7

These recipes represent only a few of the possible combinations for diabetic flours. They will, it is believed, offer suggestions as to the way in which these as well as others may be used.

In order that the nutritive value of other recipes may be determined the following table showing the nutritive value of one cup of the various flours is given.[6]

[6] *Nutritive value of the diabetic flours*

FLOUR	MEASURE	WEIGHT	PROTEIN	FAT	CARBOHYDRATE	TOTAL CALORIES
	cup	*grams*	*grams*	*grams*	*grams*	
Hoyt's gum gluten flour	1	113 (4 oz.)	36	1.80	59	396
Twenty per cent gluten meal	1	78 (2.8 oz.)	19	0.35	43	251
Soja bean meal	1	71 (2.5 oz.)	29	14.00	18	314
Vegetable gluten meal	1	113 (4 oz.)	91	1.70	11	423
Protosoy soy flour	1	85 (3 oz.)	36	17.00	21	381
Lentil brosia	1	113 (4 oz.)	28	0.11	67	381

SEVEN TEXTILE FIBERS

CHARLOTTE GIBBS BAKER

With the development of manufactures, of science, and of the arts constant changes are being made in the textile industry. It no longer suffices to learn a few rules for choosing fabrics and then to rest content, depending on the clerk to help one buy. One must be continually on the lookout for new fabrics, even for the use of new fibers. The rapid changes of fashion, the demand for novelties on the part of the women who buy, and the effort of the manufacturer to supply plenty of new things to be bought, all play their part in bringing about the changes.

Instead of being required to recognize four different fibers we must now know seven, and most of these in varying forms. There are, of course, other fibers which sometimes appear on the market, but for intelligent buying it will suffice to know ramie, jute, and artificial silk, besides cotton, wool, linen and silk. The first three fibers mentioned have been used only recently in sufficient quantity to attract our attention. Ramie and jute are not new, but are comparatively new in the American market in dress and furnishing materials; artificial, or as it is commonly called, fiber silk, is a new product of chemical investigation.

In order that we may place these fibers in their proper relation to the four long tried ones it may be well to discuss all seven that we may have their characteristics freshly in mind.

Cotton, most used of all fibers, deserves first mention. It, by its very cheapness, reaches the masses, and because of its adaptability to many purposes it serves rich and poor alike. A fiber so short that it would seem impossible to spin, a spiral twist acquired just before it leaves its pod saves it from oblivion. This twist gives it elasticity as well as the ability to be spun, and serves to identify it under the high power microscope. The shortness of the fibers causes the thread to be fuzzy, and prevents the cloth from having a luster. When the thread is broken the end is also fuzzy. Cotton lends itself to combination with linen, silk and wool, and the clever manufacturer makes it exceedingly difficult to recognize the cheaper fiber. Mercerization, a process which transforms the ordinary cotton thread into a lustrous strand, which will take dye more readily, increases the usefulness of cotton tremendously, and is now so much used that we sometimes forget that it is not much more than a dozen years since mercerized cotton appeared commonly in our markets.

Wool in point of quantity belongs next to cotton, though in price there is a long distance between them. A scaly structure on the surface of wool, especially marked in sheep's wool, gives it virtues possessed by no other fiber. It is by reason of these scales that wool mats together; that air is held in the spaces of a woolen garment; that it absorbs a great amount of moisture without seeming wet; characteristics which all have their value in clothing. Elasticity, strength and luster also are attributes of wool, and the kink, more or less conspicuous, aids in spinning and also in identifying the fiber. The finish given to the best grades of woolen cloth make them stand the weather better than other materials.

There are a number of fibers commonly classed as wools which vary somewhat from sheep's wool. The more hair-like fibers from different goats and the camel do not possess the felting quality of wool, but on the other hand are more lustrous. Very attractive upholstery fabrics are made of goats' hair. Angora goat hair makes mohair as well as the various angora knitted fabrics. Camel's hair has a number of uses, and we are all more or less familiar with alpaca from the animal of that name.

Wool fiber alone may be spun a second time. Loosely twisted threads such as those in knitted fabrics or worsted goods may be pulled to pieces and the fiber spun again, either alone or in combination with new wool or cotton, the product being known as shoddy.

Silk, the fiber of luxury, has little in common with the others. A very long fiber reaching several hundred yards in length, it has no cellular structure; the surface is unbroken and therefore reflects light, thus giving it a high luster. Its great ability to absorb dyes as well as mineral salts, gums and other substances, makes it possible to increase the weight enormously; thus the manufacturer may adulterate to such an extent that the price is greatly reduced. Our entire dependence on foreign markets for the raw fiber used in manufacturing domestic silks is due to the large amount of hand labor required in raising the worm and in reeling the silk from the cocoons. This labor must be both skilled and cheap, a combination not found in this country.

In reeling silk from the cocoons a certain amount of short uneven fiber is left. This product is not wasted, but after being thoroughly cleaned of the gum which coats it, is carded and spun, as cotton or wool is spun. Spun silk, as it is commonly called, lacks the luster of silk reeled in long threads from the cocoon, and is somewhat fuzzy. This silk is used for

the backs of satins, satiny silks, velvets, and for cheap grade silks; in wearing quality it compares quite favorably with reeled silk, but lacks its beauty.

Pongee is another variety of silk. Certain silk worms grow wild, and feed upon oaks and other trees. The silk produced by them is darker in color, is more gummy and not as perfect as that produced by the carefully cultivated worm fed only on the leaf of the white mulberry tree. The gum of this silk is not easily removed, and the silk cannot be reeled in long threads, therefore the fiber lacks luster and the thread is comparable to spun silk in its structure.

For years chemists of America and Europe have endeavored to make a fiber which would compare favorably with silk. A number of so-called artificial silks have been made synthetically, but each has lacked some desired characteristic. One has not withstood moisture, another lacked strength, a third was not sufficiently pliable, and so on. It is only quite recently that a satisfactory fiber, which can be manufactured at a reasonable price, has been developed. The artificial silk now commonly found on the market is a collodion like substance, made from cotton or wood fiber, put through capillary tubes, hardened in the air and so treated that it will withstand moisture. This fiber may be manufactured at a cost below that of pure silk, and has the promise of a great future.

Linen, with a much longer fiber than cotton, exposes a smooth surface to the light and so produces a lustrous thread. Since the fibers are long there are fewer ends on the surface of the thread, and cloth woven from it soils less quickly than cotton. Straight, non-elastic, when spun and woven the cloth is tough and leathery, particularly when the satin weave is used as in table linen. Through the ages linen has been used in religious rites, where absolute cleanliness is desired, and purple and fine linen for long were symbols of nobility. Though now often replaced by cotton, for many purposes linen is more suitable.

Ramie, a vegetable fiber of antiquity, has until very recently, been used almost exclusively in India, China and Japan. A highly lustrous fiber, in this respect surpassing linen, and very white, its use has been limited by the difficulty with which the fiber is removed from the surrounding woody tissue. Ramie has been used in combination with silk and cotton, its luster making it hard to distinguish when woven with silk, and adding richness when combined with cotton. Japanese and Chinese embroideries on this material have been common in our markets for some years, but only recently have we had the material called ramie linen, by

the piece. As methods for producing the fiber are improved we may expect more of it to appear on the market, and the shortage of European linen due to the war may give an impetus to the importation of ramie from the orient.

Jute, another vegetable fiber, is familiar to most of us in sacking, twine, and door mats, but we do not expect to find it in finer materials. The natural color of this fiber is somewhat darker than linen color, it is harsh and coarse, yet is has considerable luster. In burlap we find the fiber used alone, while in monk's cloth it is combined with cotton in a heavy material. In its natural color it adds a pleasing tone to a more denim-like cotton and jute fabric, particularly when the cotton is in soft tones.

From their very nature then, each of the seven fibers is well suited to some use or uses, and with them all we get a great variety of materials. Because of the constant demand for new fabrics, and the demand for cheap fabrics, the manufacturer and the designer are kept constantly on the alert for new methods of spinning, weaving, combining and treating these fibers. Each season brings new materials and old materials slightly disguised and bearing a new name. The woman who would buy wisely must also be alert, and must receive the new materials with an open mind, considering carefully which are worth buying and which have as their only recommendation the fact that they are novel. A discussion of the fabrics themselves will be left to other papers that are to follow this.

THE FEEDING OF CHILDREN

The attention of those who have to do with the feeding of children is called to the article in this number by Dr. E. B. Forbes, particularly to pages 126, 127, and 128. While part of this article is technical, it is thoroughly interesting, and much of it is in a form that can be applied directly to practical problems. The force of the last sentences in regard to our possible need of knowledge should appeal to every one.

Are there not mothers or housekeepers who have questions to ask in regard to diet? Miss Amy Daniels, of the University of Wisconsin, has been appointed chairman of a committee to answer such questions. Miss Daniels has had much experience, hospital and otherwise, with the feeding of babies. She has been able to give expert advice in many homes. Questions addressed to her will be published and answered in the JOURNAL.

EDITORIALS

"Bogies."—One of the vivid memories of my childhood is the relating by an honored guest of a story of his own childhood experience. He was warned never to go down a certain back staircase in his home, because there were 'bogies" under the stairs. For some months he avoided the staircase religiously until one day he awoke to the realization of the fact that there were no "bogies." Then he rushed down and fell from top to bottom. If he had been told the real reason for the prohibition, that the staircase was a crooked and dangerous one, he might have gone carefully and avoided the fall from which a false reason did not save him.

I wonder if sometimes we do not pursue a similar method in our teaching and writing.

I quote from a recently published article written for housekeepers by a woman of training and experience:

"As a result you see dishes washed in greasy, slimy water, with particles of food floating on the surface of the dishpan. This is most insanitary, and is a splendid thriving ground for all the obnoxious and disease-producing bacteria."

We have no desire to defend dirty dish water. It is wholly undesirable and inexcusable and cannot produce clean dishes. One of the objections to some dishwashing machines lies in the fact that they use the same water over and over again. The woman who uses dirty dishwater will probably offend in still more important ways. Yet the reason given is absurd. The grease and particles of food are after all simply the waste from the meal just eaten, and the dish water will certainly not remain in the pan long enough to breed disease-producing or any other bacteria.

This is only an illustration of the way in which attention may be diverted from truly dangerous practices that exist in many supposedly clean households.

We need to tell the truth about the bacteriology of the kitchen. We need to explain the difference between unsightly, disagreeable, even repellant dirt, and dangerous dirt.

We should go further, and in our whole management of the household and in our teaching in regard to it we should distinguish between aesthetic and sanitary cleanliness. Both are desirable, but one is essential.

There are times in almost every one's life when the former should be neglected.

The reasons for cleanliness lie in common decency, in safety, and in beauty. Let us not confuse the issues.

Practice Versus Preaching. In a similar way we often, in our teaching, present standards that ought not to be maintained under home conditions, instead of emphasizing the underlying principles, and showing how these may be applied in varying circumstances.

A lecturer at Chautauqua one summer said that all bedding, including mattresses, should be taken out of doors and hung on the line every day. The housewife herself should do this if no one else was available. One wondered if she had considered the possibilities of a fourth floor apartment.

A teacher, many of whose pupils lived in four or even two room flats, taught most carefully that all the bedclothes must be taken from the bed each morning and spread upon chairs to air. It was impossible under the conditions to follow her directions and the beds were not aired.

Some of us believe too that even in well-to-do households children should share in the daily tasks and that it is more important for the child to make his own bed than to carry out directions that would prevent this.

A recent text-book says that the refrigerator must be thoroughly washed in a washing soda solution each day. Of course if one is careless and upsets the milk the damage must be repaired; but even observing the old adage that "ladies and gentlemen" use cleansing processes "not to get clean but to keep clean," it would seem that time might be better spent than in washing daily a properly kept and well constructed refrigerator. Why not teach how to save time by care in arranging and handling the materials stored there?

Another book suggests that dishes after being soaked in cold water be allowed to stand fifteen minutes in hot soapy water. One wonders how much time ought to be given in the ordinary household to such tasks.

In a high school where nearly all the girls came from homes of very moderate means these statements were made on the outline of work: "The dinner napkin should be a yard square; paper napkins should

never be used in the home," with no recognition of the extra cost in money and labor involved in the use of the large napkin and of its unsuitability for the ordinary home, or of the fact that in many well ordered homes the despised paper napkin is welcomed at the breakfast table, during the season of summer fruits.

Another high school teacher was not using sewing machines because "the best work is done by hand" so her pupils spent long hours sewing seams by hand, and doing other work that could be done satisfactorily on the machine in a tenth of the time.

Perhaps these are exceptional cases, but there are too many of them.

We should help the homemaker to spend less time, not more, on the care of her house by devising and teaching quick ways of work; by eliminating labor; by showing how high standards of true cleanliness may be maintained without forever cleaning; by emphasizing the fact that after all the home offers higher duties than the care of the house.

We too often tithe "the mint and anise and cummin" and neglect "the weightier matters of the law."

The National Child Labor Committee reports that the Keating-Owen Federal Child Labor Bill (H. R. 8234) passed the House, Wednesday, February 2, 1916, by a majority of 337 to 46. The bill is now in the Senate before the Committee on Interstate Commerce. A letter or telegram to each member of the Committee and to the two Senators from your own state should be sent at once. Many Senators have expressed a desire to know what their constituents want. Let your Senators know now.

Senate Committee on Interstate Commerce: Francis G. Newlands, Chairman; Ellison D. Smith, Henry L. Myers, Willard Saulsbury, James Hamilton Lewis, Moses E. Clapp, Oscar W. Underwood, Henry F. Lippitt, Robert M. LaFollette, Atlee Pomerene, Joseph T. Robinson, William H. Thompson, Thomas P. Gore, Albert B. Cummins, George T. Oliver, Charles E. Townsend, Miles Poindexter.

BOOKS AND LITERATURE

Any book or periodical mentioned in this department may be obtained through the JOURNAL OF HOME ECONOMICS if the JOURNAL price is listed.

The Art of Good Living. French Cookery from the 14th to the 20th Century. (L'Art du Bien Manger. La Cuisine Française du XIV^e^ au XX^e^ Siècle.) Compiled and edited by E. RICHARDIN. Paris, 1914, 5th ed., enl., pp. xlvi+946, pls. 27, figs. 113.

The closely printed title page of this volume gives some indication of the variety of material which it offers and of the distinguished names which appear in the list of contributors. The 2000 or more recipes which take up the greater part of the volume are derived from all kinds of sources—some copied from old manuscript, some taken down from the landlords of out-of-the-way inns where a specially liked dish had reached perfection, some contributed by famous chefs, and still others contributed by such well-known writers as the brothers Margueritte, "Gyp," Jules Claretie, etc. Among the contributions from the literary and artistic world the reader will not readily forget Theuriet's enthusiastic description of morel mushrooms, or Coquelin Cadet's eulogy of prune pudding, while he delights to find an old favorite in Balzac's disquisition on coffee as a literary stimulant. Scattered among the recipes are accounts of famous Parisian dining clubs, of the gastronomic adventures of celebrities on their travels, and of the origin of well-known dishes. One of the most interesting and valuable sections is that by the editor, entitled "The Epicures' Geography of France," in which the characteristic food materials and dishes of the different parts of the country are briefly described. The cuts include some clever sketches illustrating the aphorisms of Brillat-Savarin and reproductions of old pictures representing the preparing and serving of food at different periods. It must be confessed that these reproductions might easily have been made to represent their theme more systematically and completely. In fact, a little less haphazard arrangement would add to the value of the whole book, but these are minor points. The main thing is that the volume is a mine of interesting gastronomic information, for the most part charmingly presented.

How to Cook and Why. By ELIZABETH CONDIT and JESSIE A. LONG. New York: Harper and Brothers, 1914. pp. 249. $1. By mail of the Journal, $1.10.

The aim of this little book, according to the editor's introduction, is to be a "first aid" or sort of middleman between the laboratory of science and the kitchen of the school or home.

Every such effort is likely to be criticised by those for whom it is intended as "too scientific," while those whose researches are interpreted in simple language may find errors in facts. Yet such a book as this cannot fail to be helpful in extending the knowledge of what has already been discovered and verified regarding a more rational choice and preparation of foods.

Some sweeping statements are made, such as: "Underdone bread is the cause of more than half the dyspepsia in the land." (Page 39.)

There are a few inaccuracies or misleading statements, such as: "Macaroni, rice, corn meal, carrots, offer practically the same material [as potatoes] at less cost." (Page 92.)

"May" should be more often substituted for "will," as for example in the statement on page 122: Milk "from tuberculous cows *will* carry the white plague to those drinking it uncooked."

A few of the directions, particularly in the care of food, set a difficult standard for the ordinary housekeeper to follow.

Yet the book is suggestive, helpful and well worth while. More paragraphing would have made it somewhat easier to read.

A Study of Foods. By RUTH A. WADDALL and EDNA N. WHITE. New York: Ginn and Company, 1914, pp. 174. $0.70. By mail of the Journal, $0.78.

Thorough preparatory training, and some years of experience in teaching and directing Home Economics in state universities, has admirably fitted these authors to make a useful book for the class room.

While the book makes little original contribution to the subject it has the distinct advantage of telling the story of the foods in fewer words than many other textbooks. Moreover the authors quote fairly and give credit to their sources of information, and the references are well chosen.

Like most recent textbooks on Home Economics, this owes much to the work of the U. S. Department of Agriculture.

The illustrations on pages 116–119 are excellent; appendix II brings the fine photographs of meat, hitherto available only through a state bulletin, within reach of every one.

The general plan and arrangement of the book will make it of service not only for teachers and pupils, but for clubs and for the housekeeper.

Bodily Changes in Pain, Hunger, Fear, and Rage. By W. B. CANNON. New York and London: D. Appleton and Company, 1915, pp. xiii+311, figs. 39.

The chapters of this book on the effect of the emotions on digestion and the nature of hunger are of special interest to students of nutrition.

Principles of Food Preparation. By MARY D. CHAMBERS. Boston: Boston Cooking School Magazine Company, 1914, pp. 251. $1. By mail of the Journal, $1.09.

In the *Principles of Food Preparation*, Mrs. Chambers does not definitely state for whom the book was designed. One may infer, however, that it is intended in part for the high school, for in the introduction the statement is made that "simple chemical tests and rough analyses of foods are included in most of the chapters, since in many of the smaller high schools and colleges this work is in charge of the teacher of Household Science."

The Topics for Study or Discussion and the Questions found in this book are very good for high school use. They are comprehensive and require much thought on the part of the pupils. The recipes on the whole are good. The work as planned gives a great deal of practice in the various processes of cooking, many combinations and much variety.

The charts of the composition of foods are accurate and the material wisely selected.

The method of procedure employed fails at two points. First, the students have not a sufficient basis in science or enough training in experimental methods to obtain results accurate enough to draw correct inferences. The author makes this statement: "Remember that the cooking of each dish in perfection is always necessary in order to make the correct inferences which is the object of the lesson."

Second, the experiments often do not deal with fundamental problems of food. For example, the effect of salt on cellulose is studied. Definite amounts of salt should be used to give accurate results. Further, very little is known of the effect of salt on cellulose, since the only published work on this subject is that of H. L. Huenink and Dr. Edward Bartow (1914). Such experiments as those showing the effect of sugar on cellulose, the effect of potassium salts on cheese, that salt in weak solution dissolves globulin, that water dissolves one-third its volume of salt, are unimportant and

secondary in comparison with the principles to be taught.

As to the contents of this book, there seems to be no logical order or sequence of lessons. The study of potato and rice is taken up in the second chapter followed by green vegetables and the study of sugar. This is followed by a number of chapters on a group of protein foods; a chapter on fat; cereals and other starchy foods; flour mixtures and leavens. In chapter four the effect of sugar on cellulose is taken up and then again in chapter eighteen sugar is studied. The material is not organized so that the book can be handled easily by the average high school girl, yet many teach ers find the book suggestive and helpful.

Some of the references, such as Jordan, Sherman, and Lusk, given at the end of each chapter, are almost too advanced for high school pupils, while Church, Knight and Hutchison are hardly considered standard at the present time.

Physiological Chemistry. By ALBERT P. MATHEWS. New York: William Wood and Company, 1915, pp. 1040. $4.25.

This is a unique textbook—a physiological chemistry that makes interesting reading for the student. The encyclopedic character of most of such textbooks renders them less desirable for student use than a better constructed book that contains less material.

Professor Mathews' book is, however, not deficient in material. The first part contains a discussion of the chemical properties of the proteins, carbohydrates and lipins (fats). In the second part is given the chemistry of the mechanism of body changes. Laboratory methods are described in the third part.

Professor Mathews has laid particular emphasis on the application of physical chemistry to physiological processes and has grouped the fundamental principles in an excellent chapter on The Physical Chemistry of Protoplasm. The part on oxidation is the only one which does not appear satisfactory, owing to a lack of illustrative material.

The chapters on the metabolism of carbohydrates and of proteins are particularly to be commended to those interested in food and nutrition.

A Review of the Literature of Phosphorus Compounds in Animal Metabolism. By E. B. FORBES and M. HELEN KEITH. Ohio Sta. Tech. Bul. 5, 1914, pp. 748.

This valuable digest of literature on phosphorus metabolism will prove of great use to teachers and students of nutrition. The material is grouped in a number of parts, including Chemistry of Organic Compounds of Phosphorus, The Phosphorus of Foods, The Phosphorus of Animal Bodies and Products, Normal Phosphorus Metabolism, and Phosphorus Metabolism in Disease.

A Text-book of Military Hygiene and Sanitation. By F. R. KEEFER. Philadelphia and London: W. B. Sanders Company, 1914, pp. 305+8, figs. 47. $1.50.

Though written for the special purpose of stating clearly and concisely the essentials of hygiene and sanitation as they concern the soldier, this volume has much in it which is of general interest and which is worthy of the attention of teachers of Home Economics.

The great problem of the army hygienist is to keep the soldier in good health, in good condition, and fit. With him things which the theorist may advise do not readily take the place of experience. So, in such a book as this, written by a man of wide knowledge of the subject (the author is lieutenant-colonel in the United States Army Medical Corps and professor of military hygiene at the United States Military Academy), one finds much about food, clothing, garbage disposal, camp hygiene, and similar matters which have had to meet the test of experience under known conditions and careful observation.

An idea of the scope of the book may be gained from the chapter headings, some of which are: Physical training, preventable diseases, clothing, water supply, foods and their preparation, and the disposal of wastes.

Exercise in Education and Medicine. By R. T. McKENZIE. Philadelphia and London: W. B. Saunders Company, 1915, 2 ed., pp. 585, figs. 478. $4.

This book contains much information of interest and value to teachers and students of Home Economics.

The place of physical exercise in education is the subject of the first part of this book. The effects of physical exercise upon the muscles, lungs, heart, nervous system, and their relation to nutrition and excretion are considered at length. One chapter of the book deals with age, sex, and occupation as factors which influence the kind and degree of physical exercise. Other chapters are devoted to a history of the development and the essential features of the German, Swedish, and French systems of physical training or gymnastics. A great deal of interesting and useful information is given regarding the opportunities for physical education as offered by the Young Men's Christian Association, Boys and Girls Camps, and the Boy Scout and Camp-fire Girls Organizations. Municipal play-grounds, gymnasia, and public baths are also discussed extensively and a number of model institutions are described somewhat in detail. The development and present place held by physical education and athletics for men and women in secondary schools, colleges, and universities are taken up and the systems employed in a number of such institutions are described.

The second part of the book takes up in a conservative manner the application of physical exercises to medicine; especially considering their value in the treatment of physical deformities like incorrect posture, club foot, and scoliosis. The value of massage and exercises in the treatment of respiratory diseases, diseases of circulation, and constipation is also considered. The exercises recommended for the treatment of the various diseases are described in detail, specific directions for performing the exercises being given and these well illustrated by figures. The great number of illustrations throughout the whole book add to its value.

Civilization and Health. By WOODS HUTCHINSON, M.D. Boston and New York: Houghton Mifflin Company, 1914, pp. 341 + 14. $1.50. By mail of the JOURNAL, $1.61.

It is unfortunate that a popular medical writer with such facilities of expression and versatility in interest does not make sure that his statements are such that they are also always reliable. The desire to please the reader at times leads to statements that are not literally true. In order to bring home a fact hyperbole often takes the place of correct statement.

Figuratively speaking, there may be some remote truth in the following statement, but it is hardly to be regarded as a thoughtful presentation in terms of relative values. "A fly in a house is as dangerous as a rattlesnake, filthy as a louse and as disgraceful as a bedbug."

To illustrate inexactness of statement, we need but cull a few examples. "About thirty years ago we began to get mortality records which really covered all the population and were reasonably accurate and reliable." This is hardly correct in view of the fact that in 1880 the mortality statistics were based on only 17 per cent of the population and in 1910 only 58.3 per cent of the population which resided in the registration area.

Similarly, the statement appears "Bright's disease increased in ten years 110 per cent." The facts: in 1900 the death rate of Bright's disease was 89 and in 1913 it was 102, thus showing in 13 years an increase of only 14.9 per cent.

As is usual with him, the author in this work has presented a vast amount of valuable and thought-provoking substance dressed in catchy literary phraseology and appealing to all types of readers. The variation in content extends from a discussion of The Diseases of Civilization to The Problems of Women in Public Life, The Vacation Habit and Crimes Against the Cow. Despite its variations from accuracy, the volume has a distinct place in the popular literature of today dealing with the problems of health.

America's Gifts to the Old World. A Pageant or Masque for Home Economics Students. By HELEN W. ATWATER and C. F. LANGWORTHY. A publication for the Richards Memorial Fund. Baltimore: American Home Economics Association, 1915, pp. vii + 20. $0.50, 5 or more copies, $0.35 each. All rights reserved.

The pageant, in the modern use of the term, has in the last five years become a very popular form of dramatic representation. Although the term originally meant the platform on which any form of "show" was given, it came to have the settled meaning of a costumed procession, and always with the implication of beauty of color and texture. The modern pageant has a certain number of lines, verses, or songs to be spoken or sung, but this is always in a way the minor part of the pageant.

There is never one important personage, or a small group of such, but a large number of people take part, each doing a comparatively small part. It is this fact that has made the pageant such an admirable form of community presentation, and it is this that makes it so admirable for schools. Every citizen, every child, can and should take part.

The pageant prepared by Miss Atwater and Dr. Langworthy, and given by them to the Richards Memorial Fund, is an entirely delightful piece of work. The free verse in which the most of it is written has a rhythm that carries it smoothly and that gives the chance for simple poetical expression without the twisting of words or sentences into a form not easily "understanded of the people." Songs in rhyme vary the presentation.

There is more of the spoken word than in many pageants, but no one character has 50 lines, altogether. The introduction offers suggestions as to the dances and processions, but these can of course be greatly varied, by the school giving the pageant, according to the age of the actors and the place of presentation.

The general theme is so clearly stated in the title that it at once calls up the vision of America presenting to Asia, Africa and Europe, Corn, Wild Rice, Beans, Pumpkin, Squash, Potato, Tomato and their brothers and sisters. What could be lovelier or simpler to arrange than a dance of the waving corn? Or more amusing than one of a flowering potato field? It is perhaps not quite clear from the introduction that at the end there should be a pageant procession to include everyone who has shared the pageant. In an elementary or high school this might well be marched to the music of national songs sung by the spectators.

The possibilities of beautiful, yet simply made, costume, are almost endless. The domestic art classes would find a wonderful opportunity here. If children of elementary school grade give the pageant—as they could delightfully—the speeches might need a little shortening, but most schools would find it possible to give the pageant as written. High school children would find no difficulties at all, while students in normal schools and colleges would find it entirely adequate for them. Wherever there are boy or men students in the same school, they should of course be an integral part of the presentation.

Aside from the beauty of the pageant, and the value of the community effort, the educational value of the information contained should not be forgotten. The names of the authors guarantee the accuracy of this, and each reading makes one realize afresh the careful research and observation that has furnished adjective and epithet.

The school that has Home Economics work and fails to give this pageant misses a wonderful opportunity, while the school so unfortunate as not to have such work will find this an admirable initial effort.

Eduard Merike's Haushaltungsbuch, von W. E. Windigg. Stuttgart: Stecker u. Schroder.

This book presents photographic reproduction of some 34 pages from the household expense book of the German poet Merike

with an introduction of 26 pages by Herr Windigg. It may be mentioned here, not for any light it throws on household accounts or expenditures, but because of the interest it lends to the study of such accounts. Like the "Privy Purse of the Princess Mary" and other reprints of personal or household expenses, it creates an "atmosphere" which helps carry such a subject in the school room, while to the historical student it would of course yield valuable facts. Merike's account book is unique in that the margins of the pages are illustrated by lively pen sketches.

BOOKS RECEIVED

Mary at the Farm and Book of Recipes Compiled During Her Visit Among the "Pennsylvania Germans." By Edith M. Thomas, Author and Publisher, Quakertown, Pa., 1915, pp. 440, pls. 20, figs. 30. $2.25. By mail of the Journal, $2.45. Orders for this book should be sent direct to the author or to the JOURNAL and not to John Hartenstine or Strawbridge and Clothier as given in the review in the February JOURNAL.

Wanted: A Young Woman to Do Housework. By C. Helene Barker. New York: Moffat Yard and Company, 1915, pp. 127. $1.00. By mail of the Journal, $1.06.

Woman in Science. By H. J. Mozans. New York: D. Appleton and Company, 1913, pp. 452. $2.50. By mail of the Journal, $2.70.

The Work of Our Hands: A Study of Occupations for Invalids. By Herbert J. Hall and Mertice M. C. Buck. New York: Moffat, Yard and Company, 1915, pp. 211. $1.50. By mail of the Journal, $1.60.

PAMPHLETS RECEIVED

The Baby's Rights. A list of some of the best books for mothers and nurses. Compiled by the Free Public Library of Newark, N. J. White Plains, N. Y.: The H. W. Wilson Company, 1915. $0.10. Orders of $1.00 or over, 50% discount.

Farm Women's Clubs. By Nell M. Barnett. Morgantown, W. Va.: Extension Division of College of Agriculture, West Virginia University, June 1914, pp. 15. (West Va. Farm Bulletin, vol. 1, no. 7).

Food for the Family. By Nell M. Barnett. West Virginia Farm Bulletin, vol. 1, no. 3, December, 1914, pp. 16.

Handbook for the Use of Homemaker's Clubs in the Province of Quebec [Canada]. Quebec, Canada: Macdonald College and Department of Agriculture, Quebec, 1914, pp. 35.

Housing Betterment. New York: National Housing Association. Vol. 4, no. 2, pp. 39. June, 1915. $0.05.

The Organization of a Rural Community. By T. N. Carver. Washington, D. C.: Government Printing Office, 1915, pp. 58. (From the yearbook of the Dept. of Agr. 1914, Y. B. Separate 632.)

The Practical Use of Disinfectants. By H. E. Hasseltine. Washington, D. C.: Government Printing Office, 1915, pp. 14. $0.05. Supt. of Documents. (U. S. Public Health Service Reprint no. 287 from Pub. Health Reports July 9, 1915.)

The Rural School System of Minnesota: A Study in School Efficiency. By H. W. Foght. Washington, D. C.: Government Printing Office, 1915, pp. 56. $0.20. Supt. of Documents. (U. S. Bureau of Education Bulletin no. 20, whole number 647.)

Saving Fuel in Heating a House. By L. P. Breckinridge and S. B. Flagg. Washington, D. C.: Government Printing Office, 1915, pp. 35. $0.05. Supt. of Documents. (Dept. of the Interior, Bureau of Mines, Technical Paper 97.)

Saving Time and Strength in Housekeeping. By Nell M. Barnett. Morgantown, W. Va.: Extension Dept. of College of Agriculture, West Virginia University, 1915, pp. 8. (Circular 8, March 1915.)

BIBLIOGRAPHY OF HOME ECONOMICS

PERIODICAL LITERATURE

Foods and Cookery

Studies of Poultry From the Farm to the Consumer. Mary E. Pennington, *U. S. Dept. Agr. Bur. Chem. Circ. 64* (1915), pp. 42, figs. 9: Reprint.

Soy Bean Milk. *Epicure*, 21 (1914), no. 250, pp. 157, 158.

Note on Vinegar. J. S. Jamieson, *Analyst*, 40 (1915) no. 468, pp. 106, 107.

Food Inspection and Analysis and Other Topics. E. F. Ladd and Alma K. Johnson, *North Dakota Sta. Spec. Bul.*, 3 (1915), no. 19, pp. 305–336.

Better Breads by Means of Natural Lactic Acid. A Wahl, *Jour. Indus. and Engin. Chem.*, 7 (1915), no. 9, pp. 773–775. The quality of bread was improved by the addition to the dough of lactic acid produced by *Bacillus delbruecki* (an organism found in germinated barley).

Sprouted Wheat. R. Harcourt, *Canad. Miller and Cerealist*, 7 (1915), no. 10, pp. 239–246. Baking tests are reported to determine the usefulness of sprouted wheat.

Honey as a Food. B. C. Aston, *Jour. Agr.* [New Zeal.], 11 (1915), no. 1, pp. 48–52, fig. 1.

A Case of Fatal Poisoning by the American Water Hemlock. *Pub. Health Bul.* [Mass.], 2 (1915), no. 2, pp. 50–52, fig. 1. This plant is often mistaken for parsnips, artichokes, sweet cicely, horseradish, or other edible roots.

Some Products of Hydrolysis of Gliadin, Lactalbumin, and the Protein of the Rice Kernel. T. B. Osborne, D. D. VanSlyke, C. S. Leavenworth, and M. Vinograd, *Jour. Biol. Chem.*, 22 (1915), no. 2, pp. 259–280.

Twenty-ninth Annual Report of the Diary and Food Division. *Ann. Rpt. Dairy and Food Div. Ohio*, 29 (1914), pp. 175, figs. 7.

Commercial Value of Flour. B. R. Jacobs, *Canad. Miller and Cerealist*, 7 (1915), no. 10, pp. 245, 246. A score-card system is described for rating commercial flours.

The Phosphoric Oxid Content of Maize Flour. J. McCrae, *Jour. Hyg.* [Cambridge], 14 (1914), no. 3, pp. 395–398.

Report of the Department of Food and Drugs Control, and Weights and Measures for the Period Ending December 31, 1914. *Rpt. Dept. Food and Drugs Control, and Weights and Measures, Nev.*, 1914, pp. 34.

Atmospheric Conditions in Relation to Bread Making. J. E. Wihlfahrt, New York: The Fleischmann Company, 1915, pp. 15, figs. 4.

Milling and Baking Qualities of Victorian Wheats. A. E. V. Richardson, P. R. Scott, and F. G. B. Winslow, *Jour. Dept. Agr. Victoria*, 12 (1914), no. 11, pp. 668–675.

Nutrition

Calorimetric Observations on Man. J. S. MacDonald, F. A. Duffield, and K. Lucas, *Rpt. Brit. Assoc. Adv. Sci.*, 84 (1914), pp. 238–241.

Studies in Endogenous Uric Acid Metabolism. G. W. Raiziss, H. Dubin, and A. I. Ringer, *Jour. Biol. Chem.*, 19 (1914), no. 4, pp. 473–485.

Creatinin and Creatin in Starvation. G. Graham and E. P. Poulton, *Jour. Physiol.*, 48 (1914), no. 5, pp. liii, liv.

Protein Minima for Maintenance. T. B. Osborne, L. B. Mendel, et al., *Jour. Biol. Chem.*, 22 (1915), no. 2, pp. 241–257, fig. 1.

Lipins in Nutrition. C. G. MacArthur and C. L. Luckett, *Jour. Biol. Chem.*, 20 (1915), no. 2, pp. 161–174, figs. 3.

The Therapeutic Value of Organic Phosphorus Compounds. E. K. Marshall, Jr., *Jour. Amer. Med. Assoc.*, 64 (1915), no. 7, pp. 573, 574.

Whey in Infant-Feeding. A. W. Bosworth, H. I. Bowditch, and B. H. Ragle, *Amer. Jour. Diseases Children*, 9 (1915), no. 2, pp. 120–125.

The Influence of Starch on Infant Digestion. T. S. Southworth, *Jour. Amer. Med. Assoc.*, 63 (1914), no. 16, pp. 1375–1377.

The Influence of Lactose on the Metabolism of an Infant. F. B. Talbot and L. W. Hill, *Amer. Jour. Diseases Children*, 8 (1914), no. 3, pp. 218–227.

Animal Calorimetry. VII, The Metabolism of a Dwarf. F. H. McCrudder and G. Lusk, *Jour. Biol. Chem.*, 13 (1913), no. 4, pp. 447–454.

Animal Calorimetry. VIII, The Alleged Influence of the Adrenals on Diabetic Metabolism. G. Lusk and J. A. Riche, *Arch. Int. Med.*, 13 (1914), no. 5, pp. 673–681, fig. 1.

Animal Calorimetry. IX, The Influence of Meat Ingestion on the Amino Acid Content of Blood and Muscle. Mary B. Wishart, *Jour. Biol. Chem.*, 20 (1915), no. 4 pp. 535–537.

Animal Calorimetry. X, The Rate at Which Ingested Glycocoll and Alanin are Metabolized. F. A. Csonka, *Jour. Biol. Chem.*, 20 (1915), no. 4, pp. 539–554, fig. 3.

Animal Calorimetry. XI, An Investigation Into the Causes of the Specific Dynamic Action of the Foodstuffs. G. Lusk and J. A. Riche, *Jour. Biol. Chem.*, 20 (1915), no. 4, pp. 555–617, pls. 15.

Animal Calorimetry. XII, The Influence of the Ingestion of Fat. J. R. Murlin, G. Lusk, and J. A. Riche, *Jour. Biol. Chem.*, 22 (1915), no. 1, pp. 15–29, figs. 3.

The Influence of Food on Metabolism. G. Lusk, *Jour. Biol. Chem.*, 20 (1915), no. 4, Proc., pp. viii–xvii.

The Harmful Effect of a Vegetable Diet. C. Voegtlin, *Amer. Jour. Physiol.*, 36 (1915), no. 4, p. 367.

Hygiene and Sanitation

Some Engineering Problems in Ventilation. D. D. Kimball, *Science*, 41 (1915), no. 1061, pp. 632–637.

Bacteria in City, Country, and Indoor Air. W. W. Browne, *Science*, 42 (1915), no. 1080, p. 351.

The Resistance of Pure Proteins to Bacterial Decomposition. Editorial, *Jour. Amer. Med. Assoc.*, 65 (1915), no. 3, p. 257.

Experiments in the Destruction of Fly Larvae in Horse Manure. F. C. Cook, R. H. Hutchinson, and F. M. Scales, *U. S. Dept. Agr. Bul.* 118 (1914), pp. 26, pls. 4.

Growth of Food Poisoning Bacilli in Meat. E. F. Sacquépée, *Compt. Rend. Soc. Biol.* [Paris], 75 (1913), no. 34, pp. 490–492. Abs. *Expt. Sta. Record*, 32 (1915), no. 6, p. 559. An experimental study of the growth of organisms of the Gärtner type upon the surface of meat as well as of the rapidity with which they penetrated the interior of the meat.

NEWS FROM THE FIELD

National Society for the Promotion of Industrial Education. The ninth annual meeting was held in Minneapolis, January 20–22. A survey of Minneapolis, financed by the city, had been made during the year for the purposes of industrial education, under the direction of the National Society for the Promotion of Industrial Education. The survey was a double one—of the educational facilities and of the industries. A 500 page report gives the results on paper, and by the time the meeting was held there were actual educational results of surprising magnitude, chiefly in the evening classes of the new Dunwoody Industrial Institute, where 1400 men engaged in industry are studying trade subjects for their advancement.

The two days of the meeting had six sessions, so closely following each other that there was hardly time for meals, and sometimes three meetings were being held at one time. Each session's program was crowded with papers, the attendance was large, and there was a general feeling of almost breathless enthusiasm and vitality.

For the first time at such a meeting, there was a large representation of Home Economics workers. The president of the American Home Economics Association, Miss Martha Van Rensselaer, was on the program of the first general session, and the secretary, Mrs. Norton, was also in attendance. One section session was given to the consideration of Home Economics work, at which Mrs. Mary S. Woolman presided and the speakers were Miss Abby L. Marlatt, Miss Josephine Berry, Miss Anna Cooley, Miss Lilla Frich and Miss Carrie Wilkerson of the Minneapolis Public Schools, and Mrs. Hickok of Minneapolis. There was a special dinner for those interested in the women's work, at which Mrs. Woolman presided. After the close of the sessions Saturday the Minnesota Home Economics Association held the luncheon noted below.

There was also an informal conference on the Smith-Hughes Act, when Mr. Lapp answered questions and received suggestions as to a wording that would define more clearly the Home Economics side of the work to be subsidized.

In all the sessions where the subject came up, homemaking received recognition as vocational work of great importance. It was also brought out clearly, however, that girls cannot be trained for two vocations at one time and that the Home Economics work given in trade schools for girls was prevocational and a part of general education, and should be followed by more intensive training for the girl who wishes to change her vocation of dressmaking, power machine work or what not, for that of homemaking. It was evident that there is much to do in organizing Home Economics courses of the many different types needed, but also evident that in this work the Home Economics teachers and supervisors would have the active and constructive coöperation of the women and men whose special interest is industrial education for girls and women.

The Minneapolis Luncheon. The Minnesota Home Economics Association, one of our affiliated societies—Mrs. Pearl Bailey Lyons, President—gave a delightful luncheon at the Hotel Leamington to the visiting members of the American Home Economics Association.

Comment upon the delicious character of the luncheon brought out the fact that Miss Lilla Frich, Supervisor of Domestic Science in the Minneapolis Schools, in addition to her other duties is director of the food department of this family hotel. Her work

should forever disprove the truth of the old saying quoted by the first speaker at this luncheon—"He who can, does; he who can't, teaches."

Mrs. Lyons introduced as speakers Miss Van Rensselaer, the President of the National Association, Mrs. Norton, Secretary, Miss Cooley of Teachers College, Miss Marlatt of the University of Wisconsin and Mrs. Woolman of Boston. One hundred twenty-nine from all parts of the state were present at the luncheon.

Home Economics at the Pan-American Congress. The Second Pan-American Scientific Congress, held in Washington, D. C., from December 27, 1915 to January 8, 1916, in joint session with many scientific and other learned societies, provided much of interest for students of Home Economics, though the subject was not specifically mentioned on the program. It could hardly have escaped consideration for, according to an official report, the Congress "deliberated upon practically every important subject in the range of human activity."

Of matters of special interest to Home Economics workers, the following may be mentioned: Papers presented at the Public Health and Medical Science Section on The Chemical Nature of Vitamines, by R. W. Williams of the Bureau of Chemistry; on The Changing Features of the Food Problem, by Dr. Lafayette B. Mendel of Yale University; and on Housing of Wage Earners, Town and City Planning, Human Side of City Planning, Artificial Illumination, and topics connected with the control of communicable diseases, by specialists of both North and South America.

One of the sub-sections on Education, devoted to the education of women, was planned and presided over by Dean Sarah Louise Arnold of Simmons College. Some of the speakers and their subjects were: Miss Julia Lathrop of the Children's Bureau, on The Education of Women as Related to the Welfare of Children; Prof. Susan Kingsbury of Bryn Mawr, and Dr. Sophonisba Breckenridge of the University of Chicago, on The Education of Women as Measured in Civic and Social Relations; Dr. Helen Putnam, on The Well-Being of Children as Determined by the Education of Women. Miss Caroline L. Hunt spoke briefly presenting by title a paper on Work for Housekeepers in the Office of Home Economics, U. S. Department of Agriculture.

An important feature of the Congress was the Women's Auxiliary Conference, arranged for the wives and daughters of delegates, by a committee, of which Mrs. Robert Lansing, wife of the Secretary of State, was Chairman. The original idea was to provide entertainment only in the form of receptions, teas, lunches, and other purely social events. Better counsel prevailed, however, and daily morning sessions were held in Continental Hall, at which many subjects of interest to women from one standpoint or another were presented: Pageantry, by Miss Hazel Mackaye; Tomorrow, by Miss Zona Gale; Patriotism, by Mrs. William Cummings Story; The General Federation of Women's Clubs, by Mrs. Percy Pennybacker; The Housing Problem, by Mrs. Albion Fellows Bacon; Women in The Red Cross Field, by Miss Mabel Boardman; and A Pan-American Bureau of Education, by Mrs. Fannie Fern Andrews.

That part of the auxiliary program which bore most directly on Home Economics was changed for the better between the dates of the first and second issues of the program, and again after the sessions began, so that the programs circulated in advance do not give an adequate idea of the meetings as held. As finally given, the program included addresses by Mrs. Henrietta C. Calvin, of the United States Bureau of Education, on The Economic Function of Women; by Mrs. J. H. Stannard of the Garland School of Home Making, on Education for Home Making; and by Mrs. Louis F. Post, on Advancing Ideals for the Home.

Those who attended the final session were led to infer from Mrs. Post's charming but apologetic address that the constructive

side of Home Economics had not been adequately treated in former sessions, and that those who were in charge of the Conference feared that the South American delegates might leave under the unfortunate impression that the American home is in decadent condition. She met the criticism that American women are extravagant in the use of food materials and blind followers of fashion in dress by saying that intelligent discussion in food problems is far more general than formerly and that women's dress is rapidly becoming more healthful and better adapted to different occasions; and of apartment house life by saying that, while, unsuited for families with children, it is not wholly evil since it often puts home life within the reach of the remnants of families, women living alone for example.

It may be that fewer explanations would have been needed if the list of speakers had included a larger number of those who represent Home Economics as taught today in schools of high standing and of workers in other Home Economics fields.

George Peabody College for Teachers. In response to a demand from agents and coöperators in the South, growing out of the great success of the summer work, George Peabody College for Teachers made arrangements to repeat during the winter quarter one of its most notable successes of the summer quarter, 1915. To that end, it is offering, through the hearty coöperation and assistance of government bureaus, two important groups of special courses for Canning Clubs and Home Demonstration Agents.

The classes enrolled during the summer represented eleven southern states. The courses were conducted by government experts in home demonstration work, and Canning Club Week brought together a notable group of pioneers in girls' and women's club work, state agents, county agents, coöperators, the girls themselves, and some of the mothers. The work of the winter quarter is expected to be equally strong in its content and conductors, and just as far-reaching in results.

The courses provided show variety and range and are of a practical nature intended to meet the special needs of Home Economics extension workers of all classes.

A commendable feature of the work is the division of the courses into two groups, Group I offered for the first term only, from January 3 to February 11; Group II extending throughout the entire winter quarter, ending March 22.

Home Demonstration Work. During the week of December 13–18, 1915, the Annual Conference of State Agents in Home Demonstration Work was held at Washington, D. C. There were about thirty-five State Agents, Assistant State and District Agents from the fifteen Southern States present.

The year's activities were reported, not only in the Girls' Canning Club Work, but also in the Home Demonstration Work for Women. Over 6000 women have made demonstrations in their homes. In the Home Demonstration Work the productive side is the first idea considered. Some splendid results were given in raising poultry and selling eggs, butter making, making various labor saving devices and in improving sanitary conditions. A fine opportunity has been afforded in teaching the best utilization of the canned products as well as the fresh products from the winter gardens.

Simmons College. The cafeteria at Simmons College gives a good illustration of what careful and systematic administration may accomplish. It was planned and equipped for 200, yet serves an average of 515 students daily with perfect orderliness and dispatch. From half-past twelve to one o'clock it has been found possible to serve ten students each minute. This has been accomplished largely by putting into the hands of the College Seniors the regulation of the routing of the students, and of the hours when each group may be served.

In the twenty school days of October there were 10,280 meals served averaging 16¼ cents each.

If Simmons College had had nine more students this year it would number 1100. Of these 130 are college graduates. It is interesting to know that Wellesley, Smith, and Vassar have each furnished exactly 18 of these graduate students.

The cafeteria, though under the direct supervision of Miss Goodrich, is each year placed in charge of a student who completed the course during the previous year. This plan makes it possible to give a year's excellent experience to some member of the class.

The Household Arts Department of the New Mexico Normal University at East Las Vegas has reconstructed its two year college course into a four year course offering the degree of Bachelor of Science.

An interesting and unique phase of the work in this department is the training of Spanish-American students for rural work in Home Economics.

The equipment is superior and the department is making big strides keeping pace with the modern development of the Home Economics Movement. This department is under the direction of Miss Lou E. Stallman, a graduate of the Kansas State Agricultural College and formerly Instructor in the Iowa State Teachers' College.

East Tennessee Home Economics Conference. The November, 1915, meeting at the East Tennessee State Normal School was the first Home Economics Conference ever held in East Tennessee.

Miss Carrie Lyford, specialist in Home Economics, U. S. Bureau of Education, addressed the conference on the subjects: Standardization of High School Courses in Home Economics, Keeping Home Economics Courses Close to Daily Life, and the Cost of Maintaining a Course in Home Economics.

Other parts of the program varied somewhat from the usual in emphasizing the importance of women's club work in Home Economics, the necessity for mothers' clubs to aid in unifying the home and school interests, and the desirability of "practice house" and lunch room training in addition to class room instruction.

In the unique session "The Apple Evening," the addresses, readings, music and refreshments illustrated the possibilities of the culture and use of apples.

The Boston Trade School for Girls, a part of the Boston public school system, has over 700 girls enrolled, with a long waiting list. It has placed this year more than one hundred and fifty girls in good positions. No more are ready to go out, although calls continue to come. Girls placed for the first time receive from $6 to $9 a week.

In this school as in others one of the great difficulties has been to find for instructors women who are skilled in a trade and who can at the same time teach. To supply this need a training class has been established that this year numbered fifteen. The class is given the principles of education, class-room demonstration and practice in the evening school.

This evening school is planned for women who are employed through the day. Many girls who have been placed through the day class come back for further work in the evening. Not only are courses offered in the sewing trades, but also for housekeepers, helpers, waitresses, or brides-to-be in cooking and buying. Miss Florence E. Leadbetter is principal of the Trade School.

The editor of the JOURNAL enjoyed meeting the seven hundred girls and making a short speech to them early in November.

The Kansas Home Economics Association according to its usual custom met in convention with the State Teachers' Association November 12 and 13, 1915, in Topeka.

The chief action of the business meeting was the acceptance of an outline of a uniform course in Home Economics for the high schools of the state, and the decision to print this outline for the use of teachers.

The following program was given:

Differentiation of Home Economics in the Various Institutions, Prof. Elizabeth Sprague, University of Kansas; Preparation and Standardization for Teaching Household Arts, Mrs. Ann Gilchrist Strong, University of Cincinnati; How to Build a Course in Costume and Designing, Miss Florence Hunt, Kansas State Agricultural College.

At the last session the following topics were discussed: The Relation of Home Economics Training to the Needs of the Community, Shall Textbooks Be Used in Home Economics? The Relation of the Home Economics Department to the High School Building and Its Care, Home Economics for the Grades, and Ways and Means of Doing Reference Work in High School.

Miss Julia Stone, state inspector of rural schools, addressed the round table on Home Economics for Rural Schools.

The Alabama Home Economics Association held its second annual conference at the Girls Technical Institute, Montevallo, January 27–29.

Reports were given showing what had been done in Home Economics in Alabama during 1915; various phases of Home Economics were discussed by Home Economics workers in the South; and vocational Phases of Home Economics as seen in California and Elsewhere, and A Survey of Home Economics in the United States were presented by Mrs. Mary Schenck Woolman of Boston.

The Missouri Association of Home Economics at a recent meeting in Kansas City changed its name from Association of Household Arts and Sciences to Association of Home Economics.

The program was largely taken up by a consideration of Home Economics in the Junior College, and the importance, in the teaching of Home Economics, of Hygiene, Exhibits of Food Products, Scoring of Foods, and Textiles and Fashions.

There were exhibits of note books, bulletins and new books. Housekeeping apartments and school lunch rooms in the various schools were visited and trips were made to many places where food and household supplies are manufactured.

Sanitary Flour Bags.—The Chicago Housewives' League has sent a letter to the retail grocers of the city, asking their coöperation in the handling of flour in dust proof, sanitary bags. The League is to publish a list giving the name and address of every Chicago retail grocer who has such flour for sale, and to distribute the list through the city.

"Anyone familiar with the shipping, transportation and dispensing of flour in its present form of packing, knows the trail of flour which leaks from every bag. It is a fact that on the floor of an empty freight car, which has just carried a shipment of flour, will be found a layer of flour an inch or more in depth. If the flour can so easily sift through the sack, it is evident that dust, dirt, moisture and other impurities can sift in. On the docks and freight warehouses, men in soiled clothing have been seen resting comfortably on piles of nice, soft sacks of flour. It is a very common thing to see bags of flour piled directly on the dusty, dirty, damp sidewalk in front of stores."

There are at least two types of sanitary bags on the market; the cotton cloth bag with paper lining, and the paper bag. The latter, of course, is somewhat cheaper, but is not so strong as the paper lined cloth bag. Even this cotton paper lined sack costs the miller only one cent more for each quarter barrel than the sack in present use, and this should be returned to him many times over by the elimination of loss by leakage, breakage or contamination during transit.

Charles Dwyer.—Charles Dwyer, editor of *The Woman's World*, 107 South Clinton Street, Chicago, Ill., slipped and fell on a sidewalk in Chicago on January 17, and died shortly afterward. Charles Dwyer

was born in Richmond, Surrey, England, in 1858. He joined the staff of *The Delineator* as assistant editor; four years later he was appointed editor; he remained in that position until 1906. He then became editor of *The Ladies' World*, and in 1913 was appointed editor of *The Woman's World*.

As one of the notices of his death says: "Mr. Dwyer had earned the affectionate regard of thousands of writers who were contributors to periodicals which he edited."

Mr. Dwyer had many friends among Home Economics workers and his loss will be keenly felt by all who knew him.

Brief Notes. The account of the meeting of the N. S. P. I. E. at Minneapolis was written by Miss Isabel Ely Lord, who was chosen at Seattle in response to the request of that Society, as the representative of the American Home Economics Association to bring about coöperation between the two Associations. Miss Lord is a member of the Board of Managers of the N. S. P. I. E. and of the Council of the A. H. E. A.

Miss Arnold, who was appointed at the Council meeting in New York as delegate to the Minneapolis meeting, was unable to attend, and her place was filled by Miss Van Rensselaer.

Several years ago, the Department of Household Arts Education, Teachers' College, published a bulletin "An Address List for Illustrative Material, Equipment and Supplies for Teaching Household Arts." This bulletin is now being revised in order to make it as complete as possible. Any helpful suggestions will be welcomed.